JUNE
27
1958

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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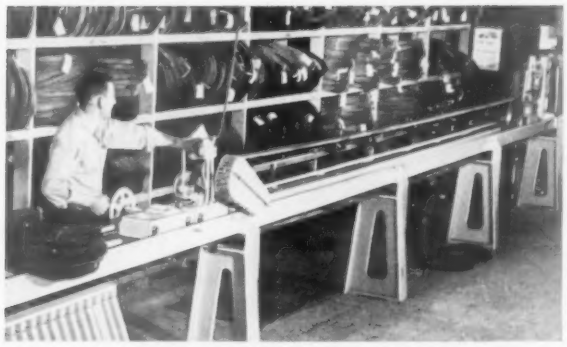

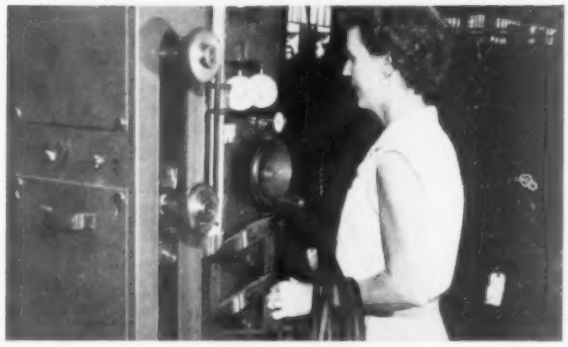

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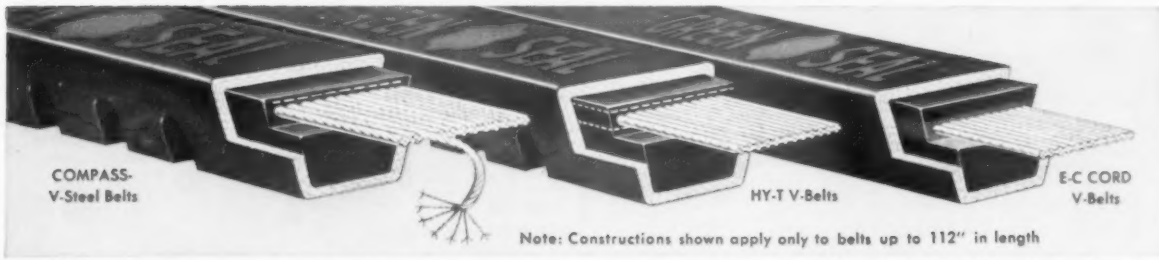

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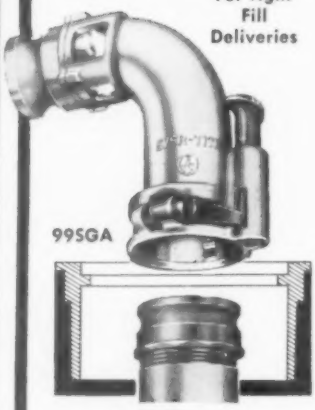

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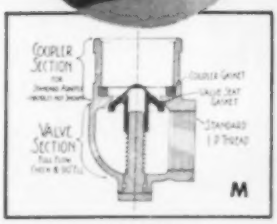

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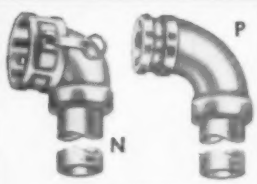

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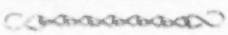

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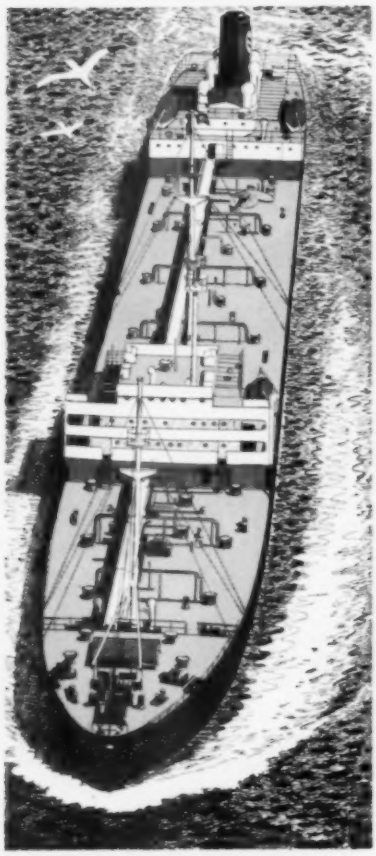
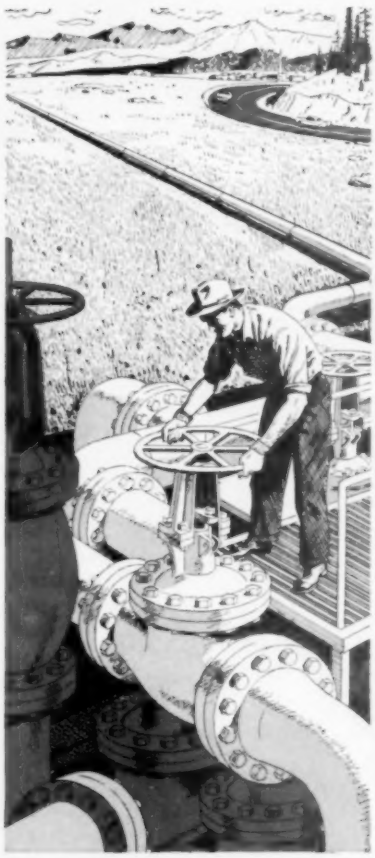
How Standard's busy transportation system helps hold down prices of petroleum products



Twenty-six Standard Tankers—plus others that we charter—sail the seas to keep crude oil moving to refineries and more than a hundred finished products returning to customers. A supertanker can hold enough gasoline to run your car over 10,000 years. On inland waters, tugs, barges and smaller tankers take over the transport job.



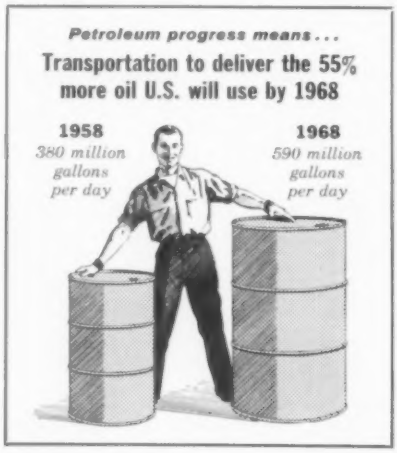
Rivers of crude oil and products flow through 3364 miles of pipelines that Standard operates in the Western hemisphere. Also, we pay to send products through other companies' pipelines. They in turn use our lines. Through these "steel arteries," oil is pumped over mountains, as high as 9500 feet, under rivers and through deserts.

Miles of railroad cars, thousands of trucks, trailers, and semi-tank trucks move finished products to distribution points, service stations, airports, marine stations, farms, factories and military installations. Standard either operates or leases nearly every form of transportation to keep vital oil supplies moving.

What's today's biggest travel bargain?—petroleum's trip from oil well to refinery to you, a journey that often covers thousands of miles by land, water and underground. To keep the "fare" low, Standard serves the Western hemisphere with a network of tankers, trucks, tank cars and pipelines.

They move oil in huge quantities carefully scheduled to match production at the well, refining capacity and our customers' needs. This far-flung transportation job is done at a cost so low it amounts to a fraction of the price per gallon—generally less than you pay to mail a postcard.

It's one way we work to keep down the price of the gasoline you buy.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380 million gallons per day
1968
590 million gallons per day

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60-Second Summary / WHAT'S HAPPENING IN OIL

June 27, 1958

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Refiners and auto makers are grumbling over "rumble"—a low-pitched knock peculiar to high-compression engines. Tests show that aromatic fuels produce the most rumble-prone engine deposits. Until solved, engine rumble could limit gasoline composition and compression ratios. . . . p. 58

•

Oil's surplus inventory position is about over east of the Rockies. Crude will be in tight supply next month, forcing refiners to hold runs down. This will bring a considerable improvement to product stocks and to product prices. . . . p. 11

•

It's time to challenge critics of oil conservation practices. An oil attorney says the public should be told what would have happened—and what could happen—to our vital resources if oil states hadn't acted to stop waste. . . . p. 13

•

The voluntary imports plan faces an early court test. Eastern States Petroleum & Chemical Corp. is challenging its legality and wants an immediate temporary injunction to halt the program. . . . p. 12

•

The Sahara's oil potential may be boosted by an indicated discovery. A wildcat found oil in a promising structure southwest of three known fields. . . . p. 51

•

The efficiency of oil recovery will improve greatly in the future. That will be especially true in recently discovered fields, a study Committee predicts. . . . p. 14

•

The search for gas on the Canadian side of Lake Erie may set a record this year. The reasons: a ready market, good prices, and a high success ratio of tests. . . . p. 22

•

Continuous modernization and constant increases in efficiency will cut terminal operating costs, Esso Standard Oil Co. learned at a North Carolina installation. . . . p. 64

•

Oklahoma's Osage County is having an upswing in drilling and production. Interest stems from the shallow pays and successful results of secondary recovery projects. . . . p. 29

•

Transportation economics point to more building of product pipelines by railroads. Rights of way are a natural route to markets to capture lost tank car business. . . . p. 44

•

Petroleum Week is making a change in its mailing procedure for some readers—a move to speed delivery. . . . p. 37

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK Copyright

June 27, 1958

Higher rental fees and royalty payments in Alaska have been approved by the Senate. A leasing bill passed by the upper house this week would hike rentals to 50¢ an acre (from 25¢) and royalty payments to 12.5% (from 5%). The bill is now before the House, where approval is expected.

•

Leo A. Hoegh will be the new mobilization chief. The former governor of Iowa will be director of the new Office of Defense & Civilian Mobilization (earlier story on page 18). Gordon Gray, head of the old ODM, is drawing a White House assignment.

One of the first decisions facing Hoegh will be on whether the government should grant financial aid to the long-proposed East Coast and West Coast pipeline projects.

•

Fate of the 4.5% tax on oil transportation by pipeline was being decided this week. House and Senate conferees were working out their differences on an excise tax extension bill, the Senate version of which calls for repeal of the 4.5% tax on pipeline movements and repeal of the 3% tax on freight.

•

Gasoline prices may be ready to move up in the primary markets. They have been firming up for some time, and this week Continental Oil Co. advanced its spot refinery price ½¢ a gal. for cargo, barge, and tank car shipment. Reduced inventories and "unprofitable" existing prices caused the advance.

•

Some buyers wonder if price cuts for Southwest Texas sweet crudes will affect West Texas postings. With the 15¢-a-bbl. cut for Sweden crude made by Sun Oil Co. this week, eight purchasers now post a top of $3.20 for these Corpus Christi area oils. Three others pay $3.35 a bbl.

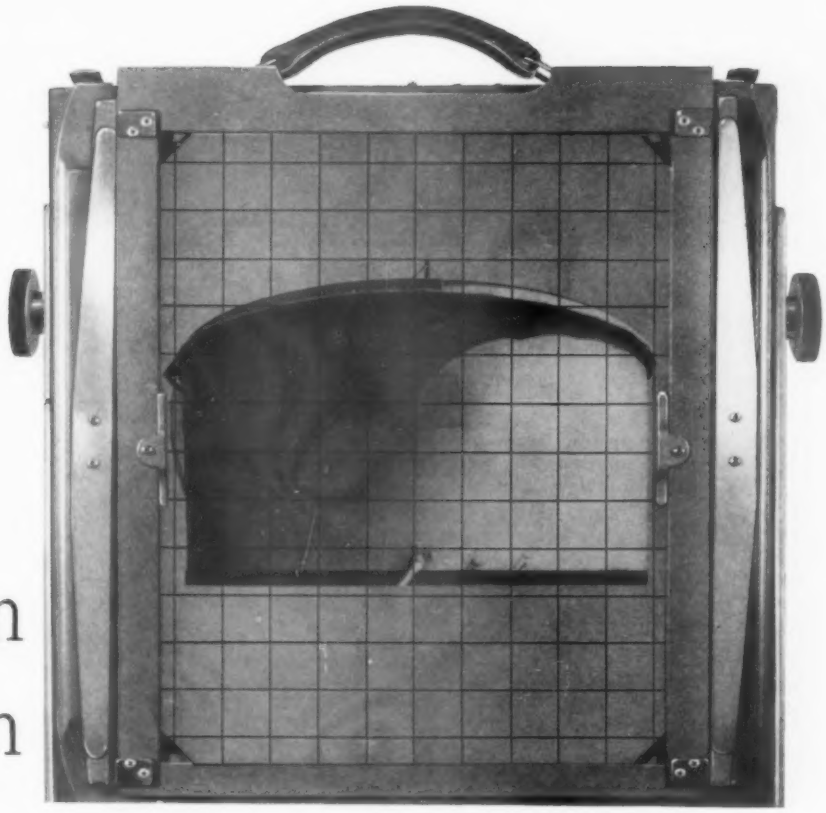
At $3.20 a bbl., the sweet crudes can be delivered to coastal refineries at a price close to West Texas intermediates. Most buyers say that, at comparable delivered prices, Southwest Texas oils are more valuable to refiners than the intermediates, which now carry a top posting of $3.08 a bbl.

•

The Iranian Consortium's wild well at Ahwaz was finally capped and closed in this week, more than two months after it blew out and caught fire. Surface pressure after capping was 3,100 psi., and a crew under the direction of well-tamer Myron Kinley immediately started pumping water into the hole. Kinley had succeeded in killing the fire on June 4 with a 750-lb. charge of dynamite.

•

A railroad's plan for a crude pipeline out of North Dakota has been shelved. Great Northern Ry. had considered a line to link North Dakota fields with refineries in Minnesota and Wisconsin (page 44). But it says now there isn't enough demand for pipeline transportation there to make the project feasible.



keep gum formation out of the picture with... Tenamene

EASTMAN GASOLINE ADDITIVES

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For more information on Tenamene additives and the service that backs up their proper use, contact our local representative or write to EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

SALES OFFICES: **Eastman Chemical Products, Inc.,** Kingsport, Tennessee; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; St. Louis; Houston. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle; Denver; Spokane; Phoenix.

DE LAVAL CENTRIFUGAL COMPRESSORS used for light gas, in Magnolia

As part of the expansion program in the Beaumont, Texas refinery of the Magnolia Petroleum Company, De Laval turbine-driven centrifugal compressors are on stream in three important applications:

- **recirculating hydrogen gas in a reforming unit**
- **pumping hydrocarbon gas in a compressor station**
- **supplying combustion air on a giant cat cracker**

Designed and built to perform dependably in heavy-duty continuous operation, De Laval centrifugal compressors are available for every refinery process. Whether you need to handle light or heavy gases at high or low pressures in catalytic cracking, reforming, alkylation, coking or any similar service, it pays to look to De Laval. We can give you the benefit of more than 40 years of experience in solving gas compression problems.

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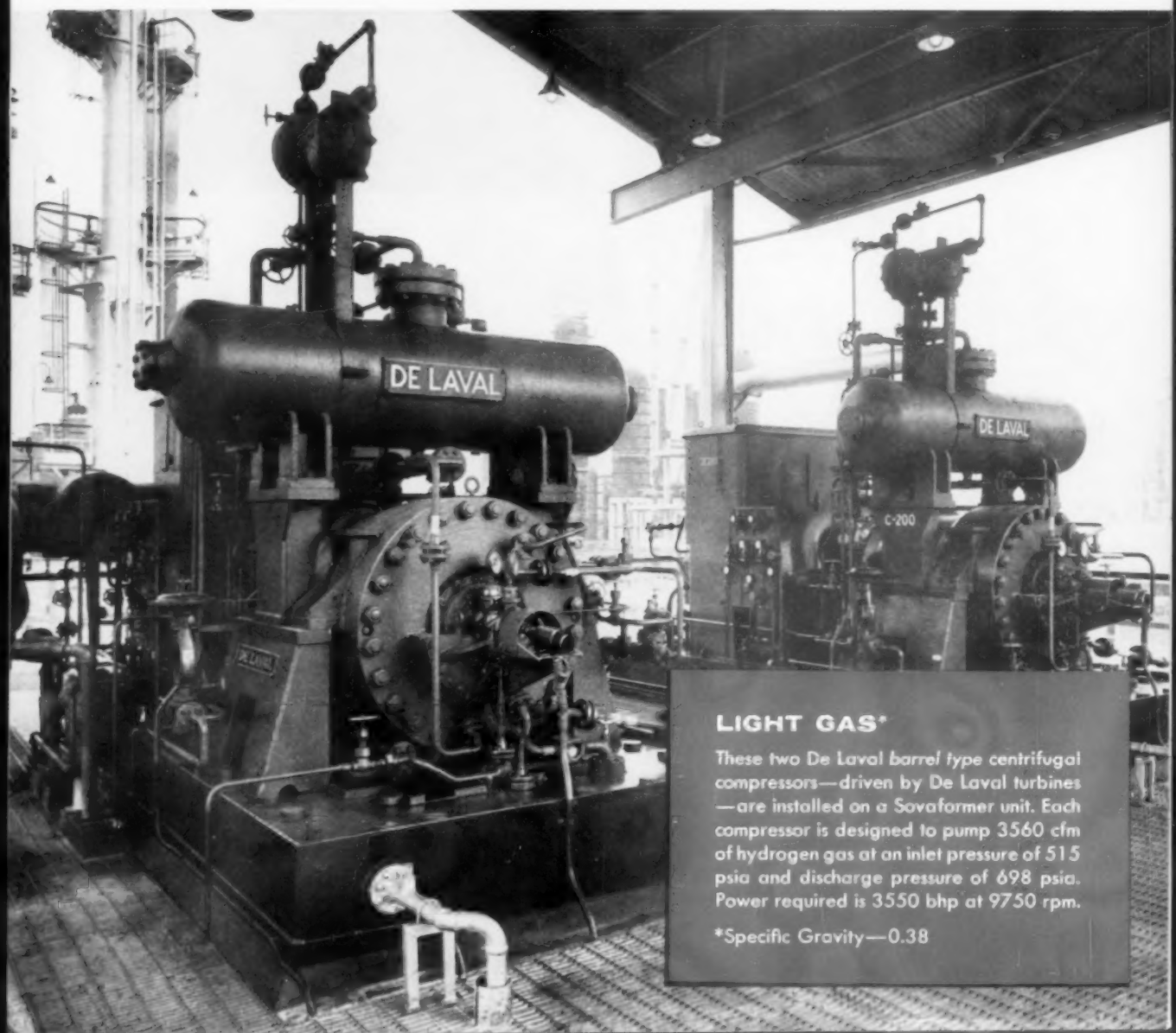
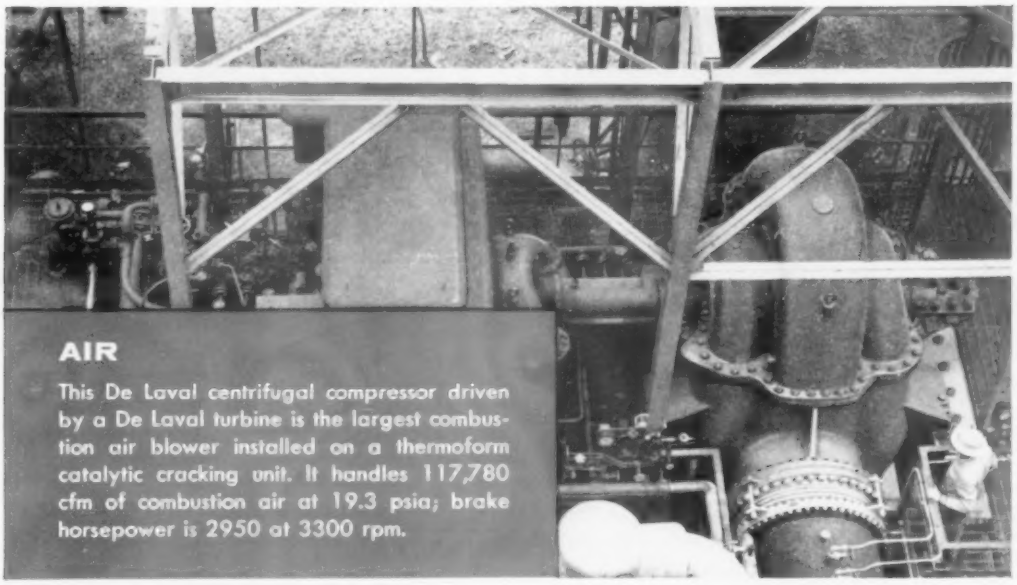


LIGHT GAS*

These two De Laval *barrel type* centrifugal compressors—driven by De Laval turbines—are installed on a Sovaformer unit. Each compressor is designed to pump 3560 cfm of hydrogen gas at an inlet pressure of 515 psia and discharge pressure of 698 psia. Power required is 3550 bhp at 9750 rpm.

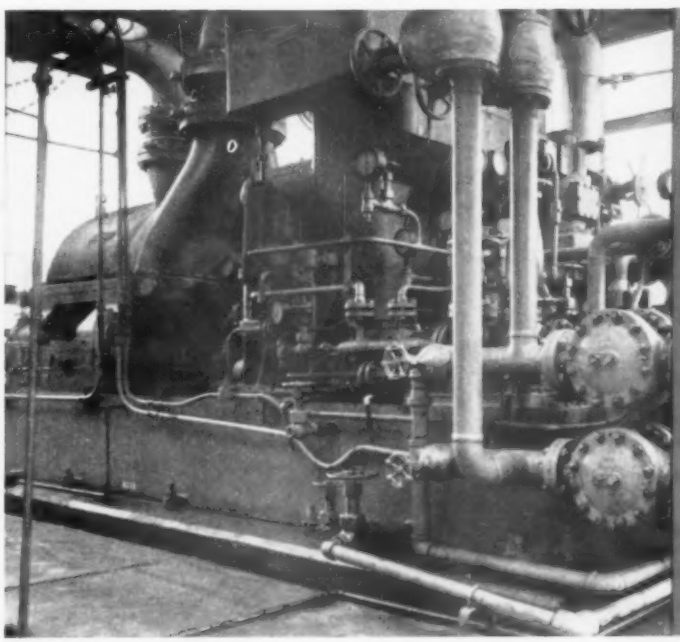
*Specific Gravity—0.38

heavy gas and air handling Petroleum's expansion program



AIR

This De Laval centrifugal compressor driven by a De Laval turbine is the largest combustion air blower installed on a thermoform catalytic cracking unit. It handles 117,780 cfm of combustion air at 19.3 psia; brake horsepower is 2950 at 3300 rpm.



HEAVY GAS*

This De Laval centrifugal compressor and turbine installation is located in Magnolia Petroleum's number 1 gas compressor station. The unit is designed to pump 10,560 cfm of hydrocarbon gas at 65.0 psia with a suction pressure of 14.0 psia.

* Specific Gravity—1.376

DE LAVAL *Centrifugal Compressors*

DE LAVAL STEAM TURBINE COMPANY
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DL-419

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3. This Ethyl service enables many companies to reduce the size of their own testing programs—with a corresponding reduction in costs.

4. Equally important, Ethyl also provides a summary of data on gasoline quality in the widely used "Annual Review of Gasoline Quality."

5. These data, when used with Ethyl's reports on gasoline sales by states and areas, provide a complete picture of the market.

Ethyl's quality reports are a service to the oil industry—typifying Ethyl's belief that service is just as important as product.

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Supply Will Be Tight in July

There is a growing belief in the industry that, given reasonably good demand next month, oil's supply-demand balance will tighten considerably east of the Rockies.

That's the opinion of some leading oil economists, who base their views on the likely volume of new supply that will be available in July, balanced against a modest expectation for total demand.

With continued tight allowables already set for July, the economists say it now appears most likely that total supply of domestic crude and gas liquids, plus imported crude and products, will run slightly below total demand. If so, it would be the first time since 1949 that total demand in July exceeded total new supply.

The prediction assumes that total demand next month will run about the same as last July, or roughly 8,664,000 b/d. Based on the recent trend of demand, such an expectation is a reasonable one.

The immediate outlook is that by the end of July, inventories of crude and products over most of the U.S. will be relatively tight—a reversal of the surplus stock position that has plagued the industry since early 1957.

It is now expected that by the end of June, total stocks of crude and products will be about 765-million bbl. (charts, below), 37-million bbl. less than a year ago.

And because of the restricted new supply in July, averaging about 8,650,000 b/d, total crude and product stocks will show no substantial change during July.

Also, economists say that by the middle of July prices of gasoline and distillates may show signs of improvement, due to the tighter inventory picture.

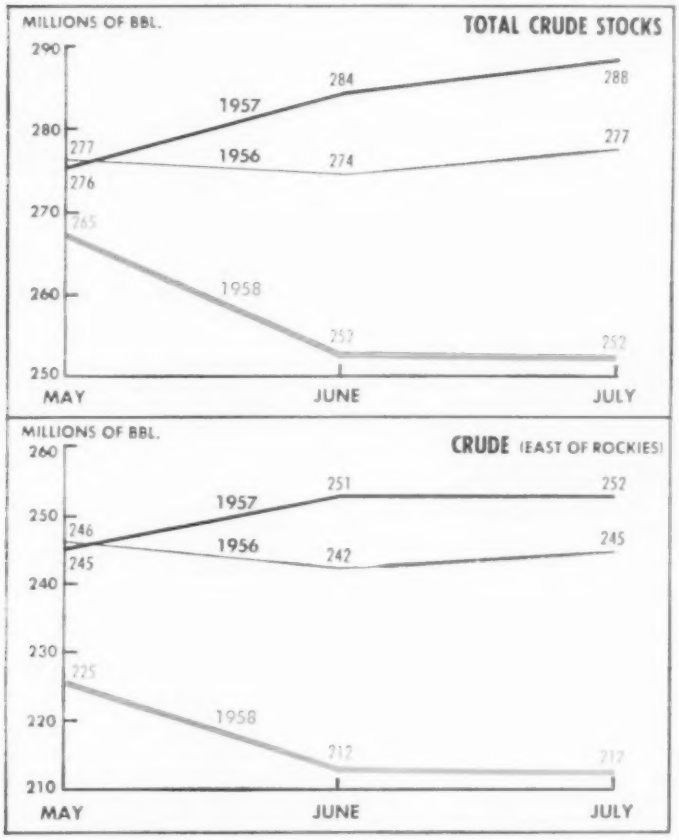
Gasoline, still plagued by price wars in a few spot areas, already has shown signs of strength in Gulf Coast primary markets. A tightening of supply would bring higher prices almost immediately.

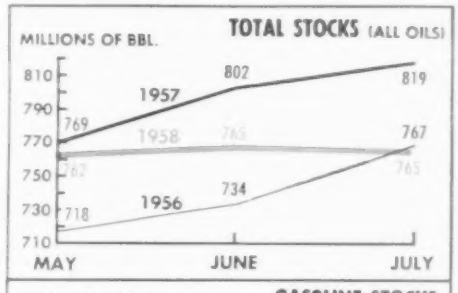
Gasoline demand has been strong in the Midwest, particularly. And generally, demand for gasoline this year has been at a better rate—relative to last year—than has demand for other products.

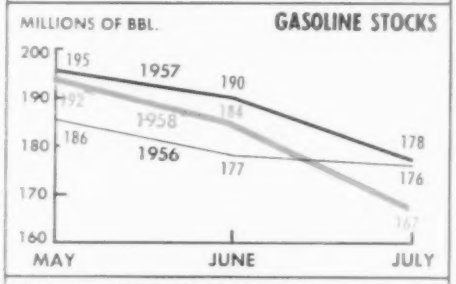
Advance buying of distillates on the Gulf Coast has been almost at a standstill. But price discounts available a few weeks ago have been removed.

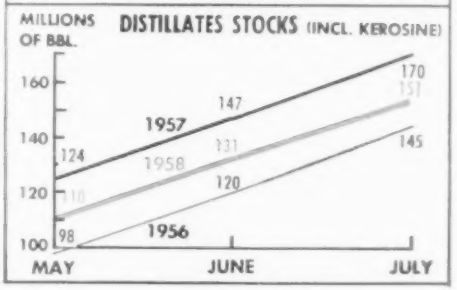
The expectation is that refinery runs in July—normally scheduled at about the June level—will be held down by a tight supply of crude. The reasoning is:

The supply of foreign and domestic









crude available to U.S. refiners in June is averaging 7.2-million b/d. Actual refinery runs are averaging 7.5-million b/d. Another 120,000 b/d of crude is used as such or exported, making total June demand for crude 7,620,000 b/d.

That is 420,000 b/d above supply, which means that crude stocks by the end of June will be 12.6-million bbl. below the end of May, or roughly 252-million bbl.

At least 40-million bbl. of the crude inventory is on the West Coast. This means that:

Crude stocks east of the Rockies by the end of June will total no more than 212-million bbl.—which, some industry sources say, is the "absolute minimum working level."

Those sources cite the fact that in February, 1957, when the emergency export program was at its peak, crude stocks east of the Rockies dropped to 220-million bbl. At that time, those industry spokesmen say, there was no crude "available" from stocks.

With crude inventories at such a level, refiners next month will have to limit runs to the currently available new supply, or about 7,230,000 b/d.

The allowables now set indicate that domestic crude output next month will run about 6,450,000 b/d. Another 900,000 b/d of imported crude will be available, making the total new supply 7,350,000 b/d. Deducting the crude used as such and exported would leave an average of 7,230,000 b/d for refiners.

The impact on product inventories will be obvious. There will be a tightening across the board, possibly eventually bringing some "correction" to the almost unwieldy surplus stocks of residual fuel.

Assuming that gasoline demand next month approximates last July, and that refiners continue the present yield pattern, gasoline stocks by the end of July will decline to about 167-million bbl., 11-million bbl. under last year, and 10-million under two years ago.

With gasoline demand at its seasonal peak, and with refinery runs limited to new crude supply, some refiners may increase their yields of gasoline if stocks become tight enough. This would further reduce output of middle distillates and residual fuel.

Thus, if the gasoline yield is boosted above the presently anticipated 45% (on crude), the rise in stocks of distillates and residual would be at a slower than anticipated rate.

Such a development would have an immediate impact on distillate prices.

Also due to the tight crude supply position, some refiners may run more of their surplus residual fuel to cokers to increase output of light products.

That would directly reduce the volume of residual now going to inventory.

For the long run, the improved inventory position means that, barring sharp increases in the rate of new supply, the industry faces a bright outlook for the rest of the year, even if total demand for all of 1958 runs below last year.

Imports Plan Faces New Hurdle

The government's voluntary imports program—The legality of which is being challenged by Eastern States Petroleum & Chemical Corp.—may face an early court test.

Attorneys for the Houston refining company placed a complaint against the imports program before a federal district court in Washington, D. C., last weekend.

First government reaction was that the program was in no immediate danger, since there would probably be a lengthy legal fight. But the fight appeared more imminent when the company took a second step this week:

Eastern States followed its initial complaint with a motion for a temporary injunction to halt the program pending outcome of the court suit.

The motion, if granted, would bar the government from stopping military purchases of petroleum from Eastern States, at least until the legality of the program is established.

Although court dockets in the District of Columbia are crowded, company attorneys said they expect early action on their move for temporary relief.

Eastern States contends the voluntary program—and the penalty for noncompliance of losing government business—is illegal.

In its complaint, the company asked the court to declare null and void the oil import actions of Administration officials.

By adopting the voluntary program, the company said, the government's executive branch is usurping legislative functions. This, Eastern States argued, is contrary to Articles I and II of the Constitution.

And the manner in which oil import quotas have been set violates the due process clause of the Constitution's Fifth Amendment and the Administrative Procedure Act, the company charged.

The company said the President has not yet found that crude oil imports constitute a threat to national security.

Instead, the President has only approved a Cabinet committee report, recommending that unless importing companies comply with the voluntary plan, the President then should deem the situation threatening.

Administration officials are also accused of misleading Eastern States on retroactive enforcement of the "Buy American" order.

The company said it was first told that it could bid on military purchases if it certified that it was currently in compliance with its quota, and that it would continue to comply during the term of the contract. That is what it did, and it won a military contract. Then, the company contends, it was told that it would have to show that it had been in compliance during the previous three months. When it failed to do so, the military stopped accepting delivery of jet fuel from Eastern States. It was this that prompted Eastern States to go to court against the imports program.

MPSA officials say that the contract has not been canceled, nor even suspended, and that it could be resumed whenever Eastern States supplies a complying product.

Wants More Time

This picture of seldom-photographed A. S. Onassis, Greek shipping magnate, was taken last week in Washington, when he appeared before a House Merchant Marine subcommittee.

Onassis is asking a time deferment in building a 106,500-ton tanker for the U.S. under the government "tradeout" program.

A proposal urged at IOCC Meeting:

'Talk Back to Critics of Conservation'

The public is often told that oil's conservation practices are simply schemes to keep prices up. Some oil men say it's time to present the facts.

The petroleum industry is beginning to fight back at those who would destroy its conservation laws.

First evidence of this came at this week's midyear meeting of the Interstate Oil Compact Commission, in Salt Lake City, Utah.

The growing attack on the principle of restricting production of oil to current needs was outlined by J. A. O'Connor, Jr., general counsel of Murphy Corp., El Dorado, Ark., in a rebuttal to conservation critics before the compact's legal committee.

He said the attack on the market demand laws, which he termed so vital to petroleum conservation practices, can lead to a misinformed public, jeopardizing not only conservation programs, but national security as well. It is for this reason, he said, that the attacks cannot go unchallenged.

To bring the fight into better perspective, market demand statutes were cited as having made it possible to achieve a producing capacity of 9½-million b/d.

This capacity, O'Connor stressed, is more than 3-million b/d in excess of present requirements. In order that this capacity may be maintained, he said, it is essential that those producers who provide the excess be permitted to share in the available market outlets.

"Experience has shown that a market demand law is an essential part of the conservation process," said O'Connor. "This is not to say that market demand does not pose its share of problems. But it is workable. It has prevented much waste. It has helped increase ultimate recovery, and it is very much in the public interest."

Drawn into the rebuttal against those who challenge the conservation laws was the fact, without conservation, the United States would long since have run short of oil.

That shortage of oil, O'Connor pointed out, would have made the nation dependent upon foreign sources for oil.

"Let those who call conservation a price-fixing gimmick, steeped as they are in the darkest possible abyss of ignorance, explain to the public what that would mean," said O'Connor.

"Let them admit that without conservation, the country would be at the mercy of foreign powers, and that if a period of oil famine had coincided with an emergency (and there is a 50-50 chance that it could have), national disaster might have been the result.

"Furthermore, let them point out the plight of the consumer in the country, who would be paying prices for oil that were set by those foreign powers who would doubtless charge all that the traffic would bear.

"Instead of 30¢ gasoline, we would probably be paying $1 a gal. or more. Consider the effect that would have on such industries as the automobile, the aviation, the railroad, shipping, and others."

Damage to the natural gas industry was seen if opponents of conservation were successful in its destruction.

It was pointed out that, since approximately half of the nation's natural gas, associated with oil, would have been lost, there also would have been disastrous effects in industrial development.

"Would they," questioned O'Connor, "be using foreign oil at the ridiculously high prices they have to pay? Or would they be back on stove wood and coal without attendent high prices and inconvenience as byproducts?

"These are the questions the public should consider when it reads one of these misdirected attacks on our conservation bodies.

"These are only a few of the considerations. Maybe we should wonder what would happen to the steel industry, or where the gigantic petrochemical industry would be, or modern farming, or the dozens of other beneficiaries of petroleum conservation."

Physical waste above ground also was stressed as one result of production in excess of available markets, storage, and transportation.

To counteract this, production based on market demand was said to insure the protection of correlative rights, and fair sharing of available market outlets among all producers. At the same time it was said to contribute to a sound, healthy oil industry with substantial reserve productive capacity for times of national emergency.

Conservation statutes in 12 states now specifically provide for consideration of market demand in setting allowables.

These are Alabama, Arizona, Florida, Kansas, Louisiana, Michigan, New Mexico, North Carolina, North Dakota, Oklahoma, Texas, and Washington. However, North Carolina does not have any oil production at this time, and the output of some of the other states is minor.

Conservation laws in three additional states—Colorado, Nebraska, and Utah—define waste in terms of production in excess of storage facilities.

Seven more states have laws that enable conservation officials to limit production to demand if they find such action necessary to prevent waste. These are Arkansas, Georgia, Indiana, Nevada, Oregon, South Dakota, and Tennessee.

State and federal courts have upheld the laws based on the principle of waste-prevention.

Imports also were drawn into the conservation picture. Tom Miller, Wyoming's representative to the compact, raised this point when he asked:

"How can conservation be effective as long as there are imports?"

This brought a quick response from Ernest O. Thompson, senior member of the Texas Railroad Commission and chairman of the Compact's legal commission. He said it is obvious that if enough foreign oil comes into this country at low enough prices, every well in the United States would be shut down.

Voluntary cooperation between state agencies and the Federal Power Commission was urged as one means available to further conservation. William R. Connole of FPC suggested a committee of the Compact be set up to suggest ways to end the conflict between the states and the federal government over conservation.

His suggestion was that the committee should be a joint one, composed of members and staff of FPC and of the Compact.

He said one specific area to be covered by such a joint effort would be a broader approach to conservation by everybody concerned. "Call it 'end use' or call it 'minimum prices to prevent economic waste,'" said Connole. "We are all interested in seeing that most value is received for every foot of gas and barrel of oil in our states."

IOCC Committee's Estimate of Resources

State	API estimate of proved crude reserves 12/31/57	IOCC Committee Estimates 1/1/58 — Primary reserves	Economic secondary recovery reserves	Primary and economic secondary reserves	1957 production	% of reserves produced in 1957
		(millions of barrels)				
N. Y.	38	0	52	52	3	5.1%
Pa.	126	29	126	155	8	5.3
W. Va.	53	49	60	109	2	2.0
Ky.	138	140	65	205	17	8.4
Ohio	68	65	7	72	6	7.7
Ind.	67	66	65	131	12	9.0
Ill.	655	356	1,200	1,556	76	4.9
Mich.	49	51	95	146	10	7.0
N. D.	258	649	110	759	13	1.7
Neb.	63	80	50	130	20	15.1
Kan.	948	850	100	950	124	13.0
Okla.	1,942	1,510	566	2,076	211	10.5
Ark.	305	149	1,100	1,249	30	2.4
Ala.	34	58	98	156	6	4.1
Miss.	360	407	86	493	37	7.5
La.	3,858(a)	4,051	2,282	6,333	298	4.7
Tex.	14,555(a)	15,201	4,856	20,066	1,057	5.3
N. M.	832	1,094	500	1,594	92	5.8
Colo.	310	282	610	892	55	6.2
Wyo.	1,420	1,234	403	1,637	110	6.7
Mont.	320	346	62	408	27	6.6
Utah	140	140	28(b)	168	5	2.7
Calif.	3,760(a)	3,760(a)	573	4,333	339	7.8
Others(c)	4	4	1	5	1	13.0
Total	30,300	30,580	13,095	43,675	2,559	5.9%
Change from 1/1/56	+288	+910	+1,116	+2,026		

(a) Includes offshore reserves.
(b) Estimate by committee chairman, subject to revision.
(c) Includes Arizona, Florida, Missouri, Nevada, South Dakota, Tennessee, Virginia, and Washington.

Oil Recovery Is Improving

There are promising prospects that there will be a much greater efficiency in oil recovery in the future, particularly in the most recently discovered fields.

That is the optimistic forecast of the Interstate Oil Compact Commission's Secondary Recovery & Pressure Maintenance Committee.

Paul D. Torrey, of Austin, committee chairman, reported this week at Salt Lake City that the brighter outlook for oil recovery is due in part to the attention given in the past two years to recovery by condensing gas drive, by other forms of high-pressure gas injection, and by thermal drive.

"There must be adequate incentive provided," Torrey warned, "to encourage the widespread utilization of these marvelous new inventions and processes"—similar to the conditions that control the development of primary reserves.

Adding primary and fluid-injection reserves to past production, the U.S. will probably produce 32.8% of the original oil in place, a much higher rate than a few decades ago.

Application of fluid injection methods already has increased the proved recoverable reserves of crude to 43.7-billion bbl.

This is 42.7% higher than the API Reserves Committee estimate (col. 1 in table). However, the differences between the API estimate and the IOCC committee's (cols. 2, 3, and 4) are not a cause of contention, according to Torrey, due to the revisions the API group makes when known fields are expanded.

The committee reported that an additional 34.5-billion bbl. of oil in place are "susceptible to recovery" by fluid injection techniques, but can't be extracted profitably under present conditions.

Tax Rule Story Taxes Experts

Alert oil tax experts have challenged the interpretation of a recent tax ruling by the Internal Revenue Service (PW—May30'58,p10).

The story concerned an IRS advisory, 58-231, on application of percentage depletion in certain instances wherein an operator has chosen to treat costs and income separately on each lease or tract for purposes of tax computation.

The information was carefully checked with the revenue agency before and after it was written, but neither IRS nor PETROLEUM WEEK caught the discrepancies at the time.

The chief point to be challenged was in an example given to demonstrate how the ruling applies.

A part of that example stated that an operator with an income of $100,000 income from a property would be required to deduct the cost of a dry hole—$25,000 in the example—and would then compute his percentage depletion on the remaining $75,000—resulting in a $20,625 depletion allowance. This statement was incorrect.

Actually, since the 27.5% depletion provision is applied to gross income, the correct depletion figure for the example should be $27,500—not $20,625. This, in turn, reduces the net taxable income.

There are times, however, when the full 27.5% cannot be taken. They arise when the 27.5% exceeds 50% of the taxable income from a property.

IRS this week cited this example: If, with a $100,000 gross income, an operator has $40,000 operating costs and a $25,000 dry hole, he would have a $35,000 income against which he would apply the 50% limitation on percentage depletion. That is, since 50% of $35,000 is $17,500, his depletion deduction could only be $17,500—not $27,500.

The IRS advisory sought to clarify the treatment of dry holes under the 1954 Revenue Code, under which operators in certain instances could elect to aggregate as one property several properties previously treated separately. (Once this choice is made, it cannot be changed. Therefore, a producer should check with a tax specialist.)

IRS also agrees that the phase "adjacent lease" was misapplied. If a producer who has not aggregated his leases drills a dry hole on an adjacent lease, the cost is not deducted from the first lease.

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What's New / IN THE INDUSTRY

Independent producers are blasting the expected government denial of financial aid to the proposed Texas-to-California crude line. Four associations of independent producers issued a joint statement last week saying that Office of Defense Mobilization rejection of the aid would "leave unsolved one of the most serious deficiencies in our defense organization."

•

The CATC Group has come up with the first offshore quadruple completion, a crude well producing from four zones through four strings of tubing. On completion, the No. L-8 state lease 970, in the West Delta block 30 field, flowed 1,200 b/d of oil and 541,000 cu. ft. of gas per day from four pay zones between 9,022 ft. and 9,789 ft.

The well, about 10 mi. off Louisiana's Southwest Pass, in Placquemines Parish, is only the second quadruple completion ever; the first was completed by Magnolia Petroleum Co. in Hidalgo County, Tex. (PW—May30'58,p27). The Magnolia quadruple, however, produces through three tube strings and the annulus between the tubing and casing.

•

Oklahoma, Kansas, and New Mexico production rates will be up slightly in July. The Oklahoma July allowable will be 560,000 b/d, up 20,000 b/d from June. The increase is due to an increase in the minimum allowable from 15 b/d to 20 b/d and a return to the depth-factor yardstick for allocated areas. The Kansas July allowable will be 310,000 b/d, 5,000 b/d over the allowable for the past three months. The New Mexico July allowable will be 322,483 b/d, up 4,995 b/d over the June allowable. The normal unit allowable for the state's southeast section will hold at 33 b/d per 40-acre unit, the northwest allowable will drop 3 b/d to 46 b/d.

•

A proposed $50-million Venezuelan-Argentine oil barter deal was virtually killed this week by Venezuela's National Economic Council, a government advisory board. The council said Venezuela would have to barter government royalty oil at prices lower than oil company purchase prices. Also, Venezuela would lose its profit from oil companies' special dollar exchange rate.

•

Some shut-in California wells are being returned to production. Standard Oil Co. of California is opening up about 4,000 b/d of its shut-in production in the San Joaquin Valley. The company is thought to be the first to reopen wells shut in last winter because of surplus supply.

•

Plans for next year's Fifth World Petroleum Congress have been completed. Last week in Vienna, a special two-day meeting of the congress's policy-making permanent council set up final arrangements for the conclave. The council selected 280 technical papers for delivery during the congress, which will be held at New York City's Coliseum and Carnegie Hall from May 30 to June 6. The meeting also elected three Russian scientists to the council.

•

A U.S. firm will build Iraq's first petrochemical plant, a sulfur recovery plant near the Kirkuk oil field. Ralph M. Parsons Co., of Los Angeles, will have the plant ready by mid-1960. The plant will process natural gas now being flared.

INSIDE *Slant*

AN AIR OF OPTIMISM

San Francisco—An air of optimism prevails among oil men on the Pacific Coast.

It isn't exactly one of overwhelming enthusiasm, particularly as far as the Pacific Coast is concerned, but industry leaders here are beginning to see the brighter side for the nation as a whole.

The feeling generally is that the Pacific Coast itself, however, will be slower to recover from the current economic ills than the petroleum industry elsewhere.

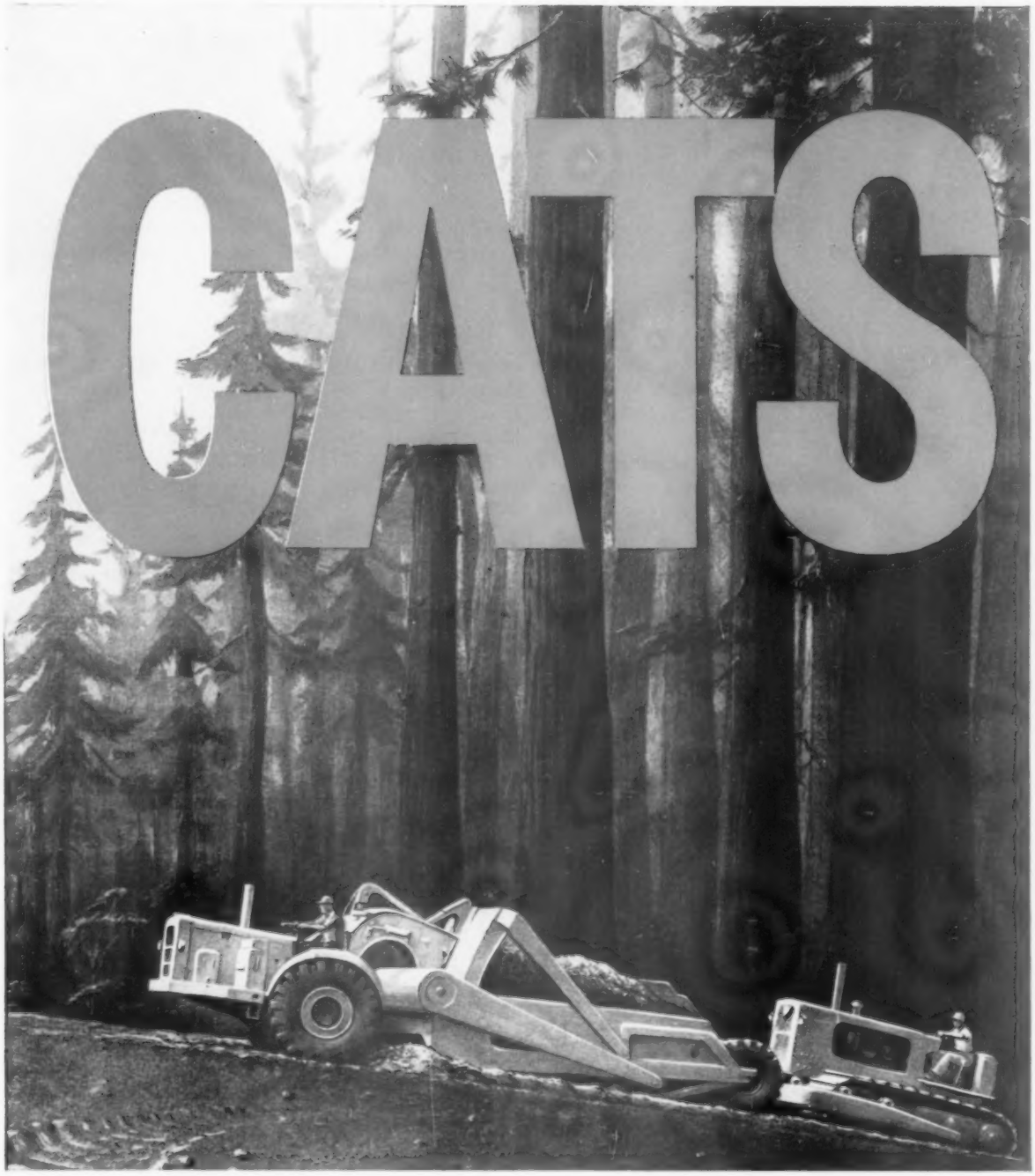
One of the reasons for this feeling is that the area still is burdened with an oversupply. It hasn't been able to lower its inventories to the satisfactory level achieved elsewhere.

But, in the face of this situation, the leaders say business has been on the upturn during the past 30 to 60 days. It hasn't been anything sensational, but things have bottomed out.

Looming brightly for the equipment manufacturers and supply people has been the continued high level of activity in some of the unprorated states and in their export markets, and the increase in the Texas allowable for July.

With the downturn in activity here, they've had to turn elsewhere, with encouraging results.

Leroy Menzing
EDITOR



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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
June 27, 1958

Oil-state lawmakers are interested in a government loan program for domestic production. The Interior Dept. is pressing Congress for authority to extend the Defense Minerals Exploration Administration, an agency set up during the Korean days to boost national defense stockpiles. Under the proposed extension, government loans would be made to producers of strategic materials, mostly minerals.

•

An effort may be made in the House to authorize loans to oil producers. The Senate's version of the bill is expected to be sent to the House soon, probably without any oil provision. Then a decision will be made among key House members from producing areas as to whether the idea is worth pushing. Although domestic producers still are concentrating their worries on oil imports, they may not be averse to financial help.

•

The Administration is throwing its big guns into the Senate trade bill fight. Note the first witnesses before the Senate Finance Committee—Secretary of State John Foster Dulles and Secretary of Commerce Sinclair Weeks. Both are opposed to mandatory restrictions on oil imports. Their testimony again demonstrated the unanimity within the Administration in favor of a voluntary restriction program. Senators from oil-producing states will find this opposition hard to overcome.

•

There may be a change of faces in ODM—now OCDM. That's the new combined agency, the Office of Civil & Defense Mobilization. When the ODM-civil defense merger was first announced, there was a general expectation that Defense Mobilizer Gordon Gray would remain in the top job. Now there is talk that the civil defense chief, Leo Hoegh, a former Republican governor of Iowa, may head the new agency. A decision by the White House is expected soon. Some major oil policies are in OCDM's bailiwick; thus, a change in directors could have some effect on oil.

•

More natural gas pipeline companies are getting customer help on their rate problems. With no "Memphis" case action expected from the U.S. Supreme Court until this fall or winter, the pipeline firms are caught in a squeeze on rate increases. One method to avert the Memphis case's effect is to get prior approval of rates by customers. Several companies have found this route successful. Now two more companies—Natural Gas Pipeline Co. of America and Texas-Illinois Natural Gas Pipeline Co.—have obtained customer approval.

•

Applications are piling up for more crude oil import allocations in districts I-IV. Latest count by the Interior Dept. shows more than 40 pending applications for initial or revised shares in the voluntary program. And the total amount of crude oil involved is approaching 300,000 b/d. M. V. Carson, oil imports administrator, has said he won't take any action on these applications until after Sept. 1, however. Chances are that only a small percentage of the requested increases will be allowed.

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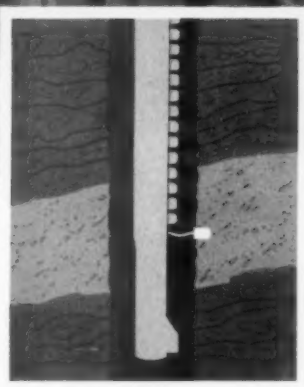

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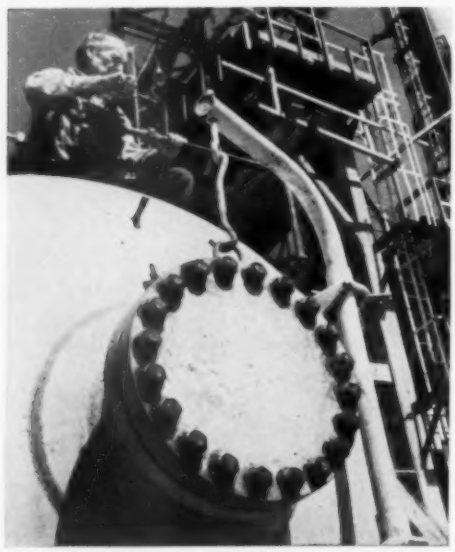

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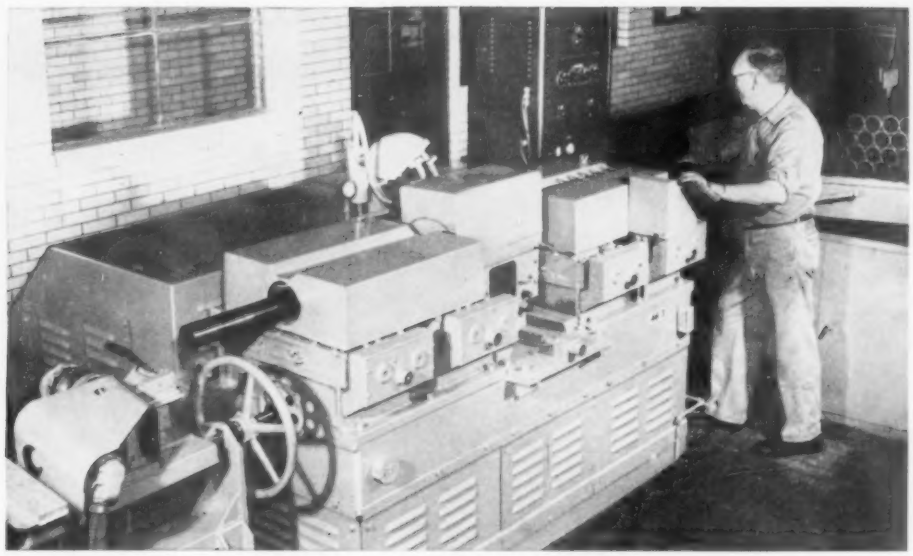

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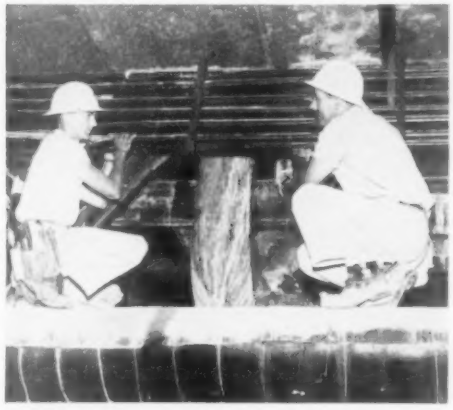

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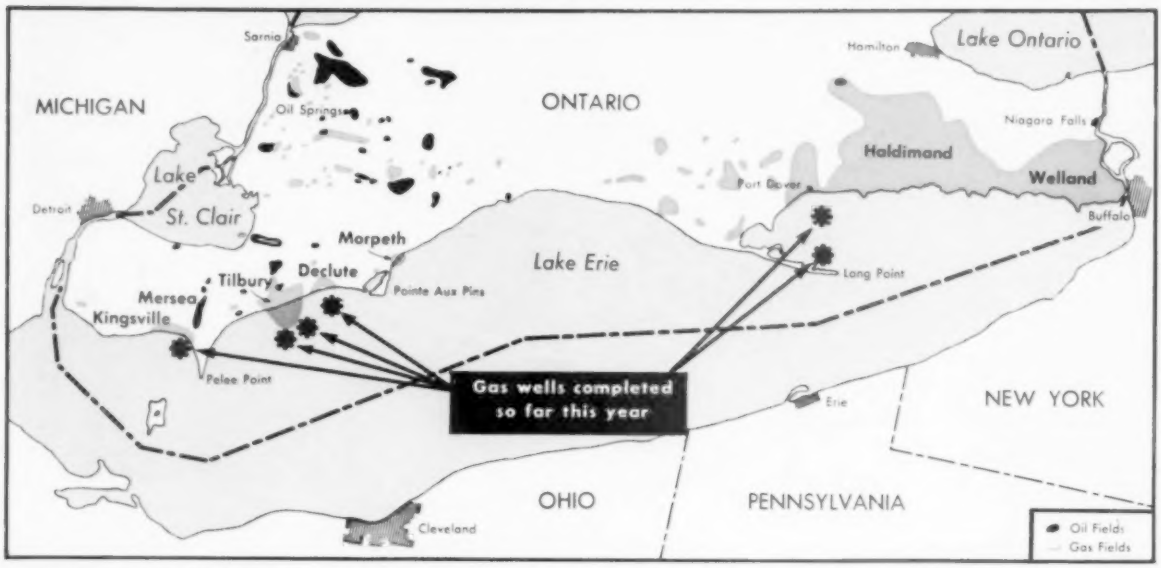

OFFSHORE GAS COMPLETIONS, posted in widely-scattered sections of Lake Erie, underscore heavy activity, and possibility that . . .

Lake Erie Play Heads for Record Year

Exploration and development drilling on the Canadian side of Lake Erie may be headed for a record year.

Offshore drilling in this area is reaching its peak, with more than 20 companies active in the play.

These companies are planning a total of about 50 tests this season, depending on weather, availability of drilling towers, and—in the case of smaller operators—sufficient financing to carry on the higher-cost offshore operations.

Altogether, companies and individuals have taken over 1.5-million acres under either "licenses of occupation" or leases, and have applied for almost all of the remaining acreage available, out to the international boundary.

A holder of a license of occupation has the right to explore and drill on the acreage, granted in blocks of 8 sq. mi. or less. He can convert to lease when a required amount of reserves is found.

Exploration efforts are aimed at establishing extensions to the 12 existing onshore gas fields, stretching all along the Canadian shore of the lake.

Some geologists believe there is an interconnection between the Clinton fields of Ohio and the Clinton fields of Ontario. Another possibility is extension of the prolific Trenton oil zone along the Cincinnati Arch of Ohio.

Another big factor behind the gas hunt: There is a ready market for gas, at prices ranging from 35 cents to 45 cents per Mcf.

On the other hand, the picture is clouded by the fact that geologists and operators believe that gas has been drained from 4½ mi. out in the lake by onshore wells in the Tilbury field, and possibly other areas. Connate water in the gas pay is another problem.

The high success ratio in the shallow drilling to date is further incentive to current activity.

Of the 92 tests drilled so far, 82 were successful.

The high success ratio can be misleading, however, since most of it is due to concentration of drilling off proven gas fields.

Of nine wildcats drilled, only one has been a success.

The leading offshore developer is Consolidated West Petroleum, Ltd., which inaugurated modern underwater drilling in the lake with a significant stepout in the fall of 1943.

Since then, the company has completed 49 tests, most of them in the Tilbury field area, on the west side of the lake. Of these 49, 48 were successful (the only dry hole was drilled last year), with 45 currently on production. Two of the producers were completed a few weeks ago, one for 300,000 cu. ft. daily, the other for 500,000 cu. ft. daily.

Production, at depths ranging from 1,150 ft. to 1,350 ft. in the Salina and Guelph (Silurian) Dolomites, totaled 3,183,034,000 cu. ft. in the period from 1943 through 1956 (latest figures available).

The great bulk of offshore gas wells have been completed in the Tilbury area.

In addition to Consolidated West Petroleum's wells, Dominion Natural Gas Co. has had 13 successes here (9 wells are on production). Huron Construction Co., the only other company with current production in the lake, has 4 producers off Morpeth field, just east of Tilbury.

CWP has proved an area of about 13 sq. mi. off Tilbury. The farthest offshore producer, completed this spring, is 5½ mi from shore. (Last year's dry hole was a 7-mi. outpost opposite Tilbury field.)

The company plans to drill from 12 to 16 tests this year (it drilled 13 yast year). One scheduled test will be aimed at the Trenton formation, at about 2,600 ft. to 2,700 ft. There have been no producers from this formation in the field to date.

Other companies have brought in four gas wells in other areas so far this year, all currently shut in awaiting pipeline connections.

Submarine Oil & Gas, Ltd., completed a well near Port Alma, off Declute field, just east of Tilbury. It

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had an open flow of slightly more than 1-million cu. ft. daily.

Another well, started last fall, was completed near Long Point, off Norfolk County, by Foreign Exploration Corp. The well tested 140,000 cu. ft. of gas daily, with production from the Red Medina sands at 1,209 ft.

In the Kingsville field sector of the lake, Phillips Petroleum Co. has just completed a shallow gas well that flowed at the rate of 400,000 cu. ft. daily on drillstem tests. The well was completed at 885 ft., after topping the Guelph at 835 ft.

The fourth success, only a few weeks ago, is Long Point Gas & Oil, Ltd., No. 1 Port Dover, which had an estimated open flow in excess of 1.2-million cu. ft. daily. Production is from the Red Medina, at 968 ft. The well is ¾ mi. southeast of Port Dover, and appears to be an extension of the onshore Norfolk field.

Many other tests are under way or planned.

Some of the drilling programs planned for this year include: Midcon Oil & Gas Group (Midcon, Baska, and Wespac Petroleums), 5 tests (Midcon Oil & Gas Co. has come up with the only strictly wildcat success in the lake to date—a 1-million cf/d producer off Declute); Place Oil & Gas Co., 10 tests, in various areas; and Long Point Gas & Oil, 20 tests off Port Dover.

The cost of offshore drilling in the lake is high, running nearly double that of an onshore test in the area.

In addition, a holder of a license must spend $500 per sq mi. the first year, $1,000 per sq. mi. in each of the next two years in exploration.

Too, removal of water from wells during high winter gas demand poses a constant difficulty.

The weather also complicates matters, and often restricts drilling operations from early fall to late spring.

The gravity meter is the usual geophysical instrument used both on land and offshore in southwestern Ontario.

Seismic methods are of little use in this region, due to the shallow and mainly lime Paleozoic section. Reflections, as a result, are poor or useless.

Cost of a gravity survey runs to about $3,000 for 5,000 acres, or 60¢ an acre. This is for station spacing of ¼ mi. along grid lines 3,000 ft. apart.

There are four basic types of drilling equipment that have been, or are, in use on the lake.

These are the piling-type platform; the rotary drilling barge; and the nonfloating and floating-type platforms.

Pilings were used in early work, near shore in the Tilbury field area. But both this type and the rotary barge method are no longer in use.

The nonfloating, fixed platform was first used by CWP in 1951, succeeding the wooden platforms previously used. Now, it has seven drilling platforms, three of which are used for contract work.

Simply designed, the unit is a steel scaffold on four legs, secured by wire lines attached to the lake bottom.

The floating-type mobile platform made its debut on the lake last fall.

Developed by Long Point Gas & Oil, the unit is an equilateral triangle in shape, 60 ft. long on each side. It is towed to the drill site with its three legs in elevated position. These are lowered hydraulically to the lake bed and are used to raise the platform about 10 ft. above the water for drilling operations.

The platform is said to be able to withstand winds up to 80 mph., and wave action to 20 mph.

Drilling, especially at the eastern end of the lake, is restricted to within a few miles from shore, since water depth ranges from 100 ft. to 200 ft. None of the platforms developed for use in the lake so far can drill in more than 80 ft. of water.

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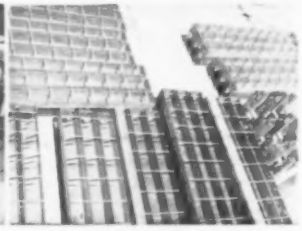

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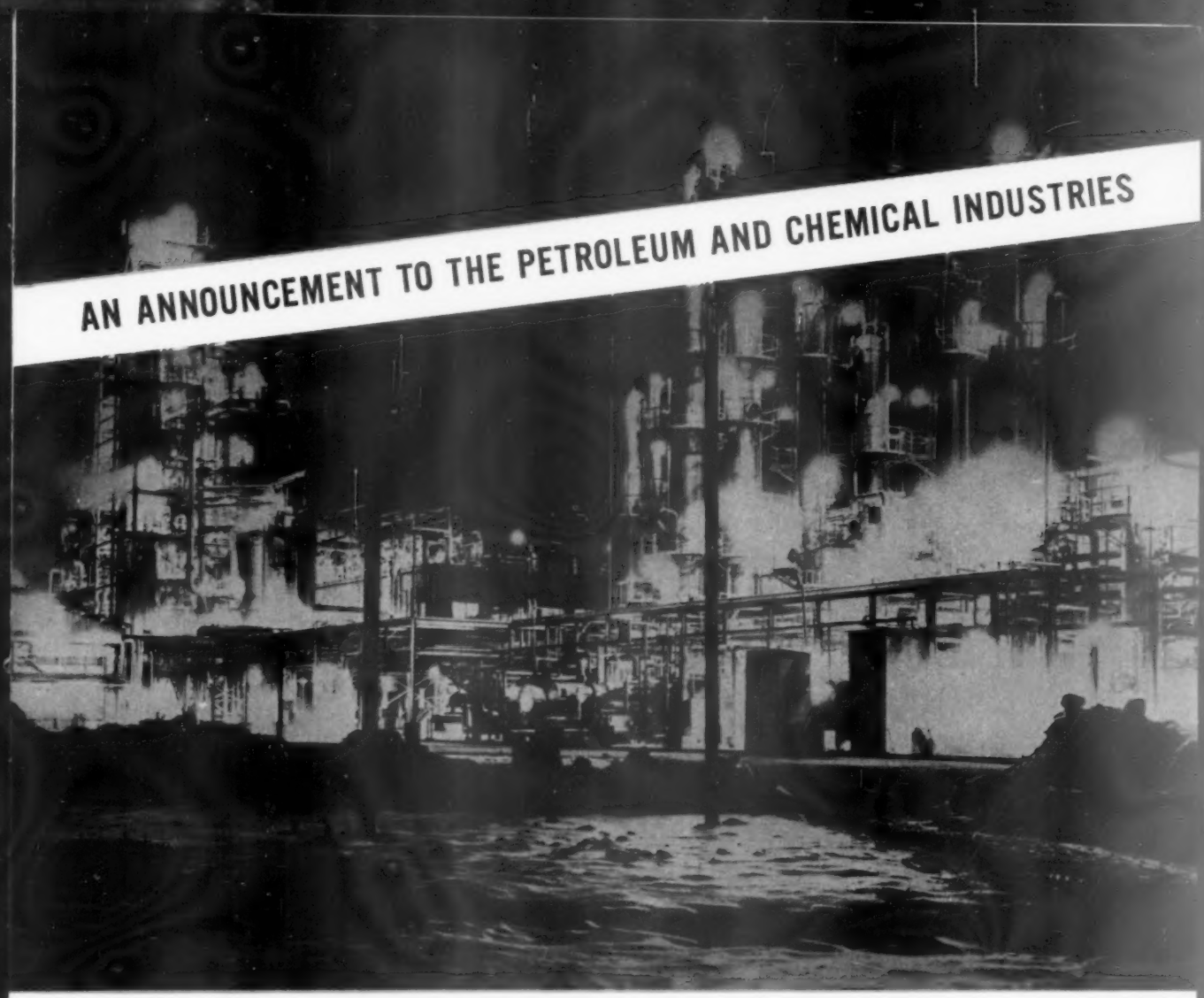

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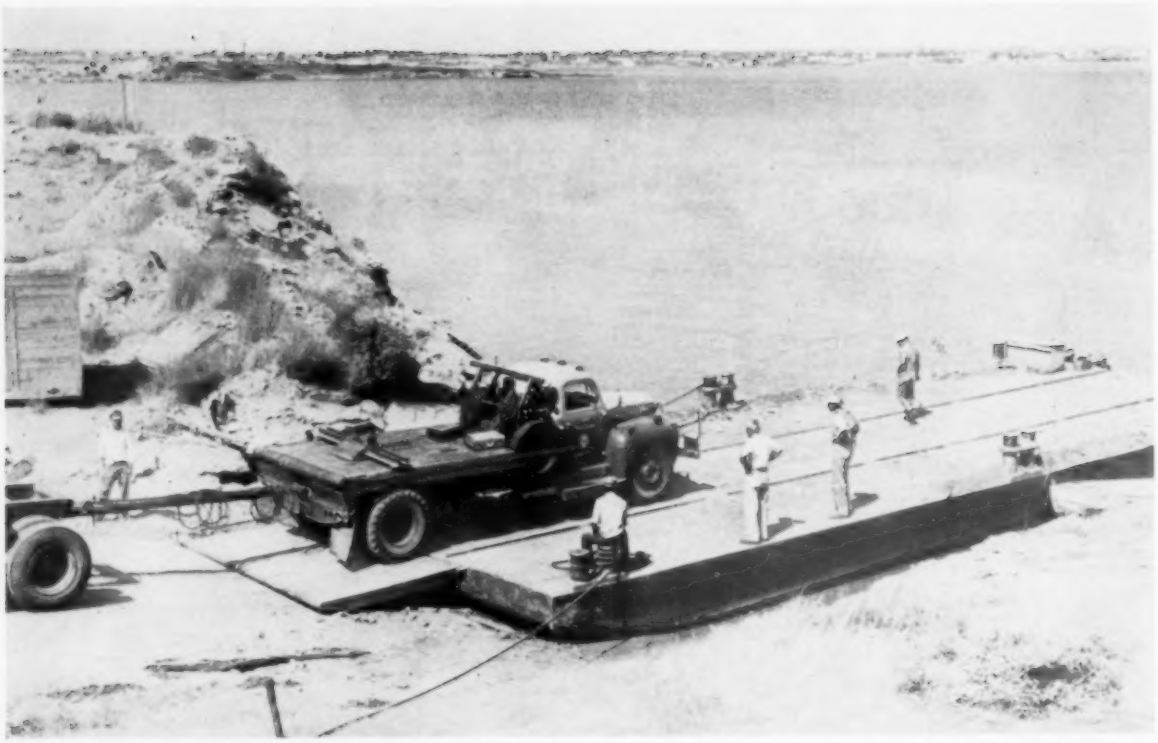

ALL ABOARD IN WEST TEXAS: A Shell Oil Co. truck is driven aboard a barge to be ferried out to service a well in Lake Thomas.

Well Servicing Can Be Wet Work In West Texas

In dry West Texas, you would think that all wells would be on solid land. This, however, is not always the case.

For example, Shell Oil Co. has five wells producing "offshore" in West Texas. Offshore, in this instance, is Lake Thomas, in Borden County. The five wells are part of the Von Roeder field.

These wells are on man-made islands, and must be serviced by boat.

Recently, one of the wells needed larger tubing. Men and small equipment were ferried out to the island by boat. A heavy utility truck was put on a barge and towed out to the island.

There, tubing was pulled, new tubing was installed, and other work was carried on in the same fashion as with onshore workovers. The only difference was the wide expanse of water surrounding the wellhead.

The five wells were surrounded by water five years ago, when the Colorado River was dammed to create Lake Thomas, which covers 12 sq. mi. The lake was designed to build up badly needed water supplies in that part of West Texas.

Before the area was flooded, big mounds of dirt were built around the wellheads to protect them. The wells in no way affect the purity of the reservoir.

ON AN ISLAND in the lake, a Shell crew moves a flowline out of the way so truck can drive in and pick up a load of tubing.

TUBING IS LOADED on truck, ready for a return trip to dry land. Larger tubing and a larger pump were installed at the well.

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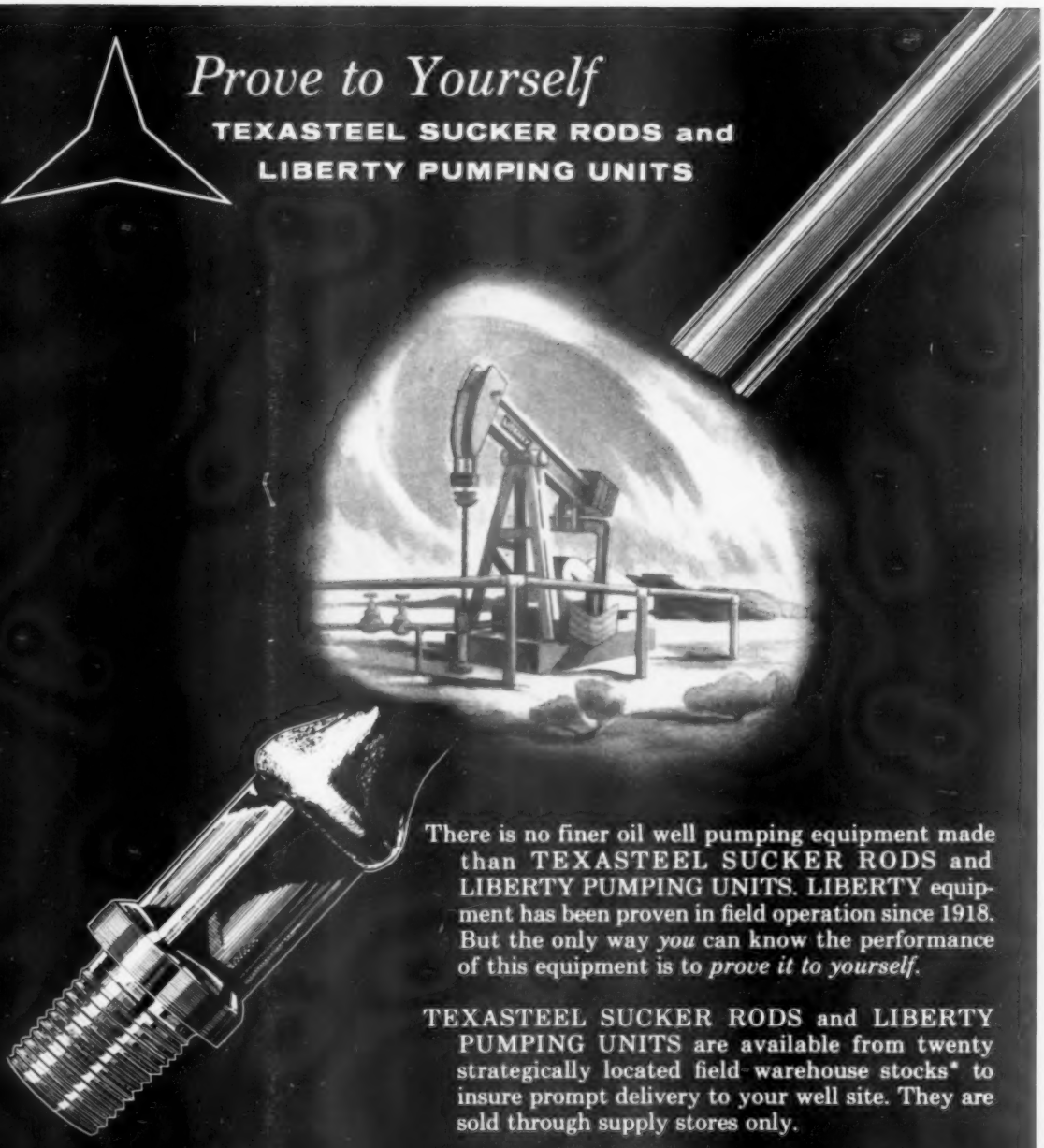

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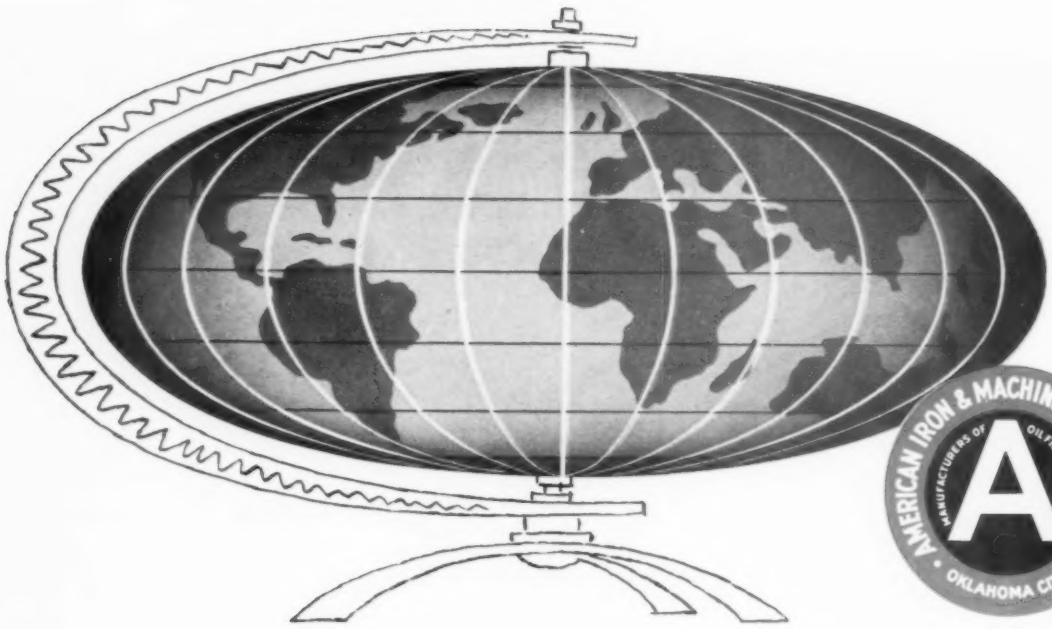

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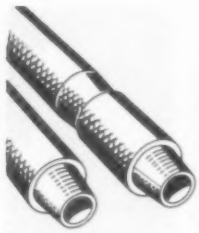

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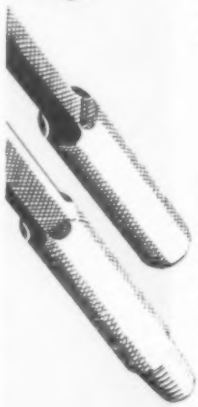

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Paradox Spacing Fight Nears End

The Paradox Basin spacing battle is nearing the showdown stage. A final decision by the Utah Oil & Gas Conservation Commission is expected in August.

Two parallel contests—one involving Aneth pool and the other the Desert Creek area—will be decided separately that month.

The agency is faced with a final order on Aneth and an original order on Desert Creek

At issue is whether Aneth pool and the Desert Creek area should be drilled on a 40-acre or an 80-acre spacing basis.

An estimated 6,000 acres of proved or potentially proved land in San Juan County is involved. Indirectly, a large expenditure of funds for drilling and development, and other factors involving market and pipeline considerations, are also a part of the picture.

Proponents of 80-acre spacing include The Texas Co., Continental Oil Co., Phillips Petroleum Co., Superior Oil Co. of California, and Carter Oil Co.

Shell Oil Co., Standard Oil Co. of California, and Gulf Oil Corp. oppose 80-acre spacing.

Judgment on Aneth spacing has been held up pending submission of further information regarding oil production and the effect of production on the reservoir.

Shell won an initial advantage in the Aneth case, when the commission first ruled in favor of the traditional 40-acre pattern for field development. The final decision, however, will hinge largely on written briefs and any new evidence to be submitted at a hearing Aug. 4.

The hearing originally was set for May 6, but was deferred when the agency agreed with a motion by Sun Oil Co., Pure Oil Co., and Ohio Oil Co. that delays in getting crude flowing into the Four Corners Pipeline Co. system to the Los Angeles refining district limited available engineering information.

Briefs were filed with the commission last week regarding spacing at Desert Creek.

A transcript of the hearing on Desert Creek spacing has been completed, and original written briefs based on the transcript have been received by the commission. Written reply briefs will be received until July 9.

The decision on Desert Creek must be rendered in 30 days, or by Aug. 9.

New Mexico is facing a similar spacing argument at Bisti field.

The New Mexico Oil & Gas Conservation Commission ruled first for 40-acre spacing, then reversed its decision and set up 80-acre spacing.

Now, the issue is being tested in the courts. Shell argues that it has drilled several wells in the field on 40-acre spacing and, under New Mexico proration laws, has apparently been assigned production equal to only one well per 80 acres.

Osage County Is on Its Way Up

Drilling is on the upswing in Osage County, Okla., which began its oil history more than 45 years ago. Typical of the activity is the revival by Cities Service Oil Co. of a lease dating back to 1911.

Cities Service calls its Lot 292 a "story-book lease," and says its final chapters promise to be "most dramatic and far-reaching." The lease covers 320 acres.

When Cities Service was formed, a few months after production was found on the lease, the company bought the lease and several adjoining it.

The lease was producing 145 b/d in 1912, but the company started a drilling program that eventually brought production up to 400 b/d in 1920.

Cities Service has drilled more than 20 new wells on the lease in recent months. Production has climbed to about 550 b/d, topping the 1920 peak.

"Production from 1911 until recently has been consistent, but slowly on the downgrade," says a company spokesman. "By 1956, lease production had dwindled to 21 b/d."

In 1956, however, a core test was drilled to obtain geological information on which to base a decision on waterflooding.

"The core test indicated additional Bartlesville sand pays, and new completion techniques were used to bring in a well with a potential of 200 b/d," says the spokesman.

"Probably in this year, or in 1959, we will begin a waterflood project on this lot," says the company. "This operation will take about 12 years, and we will probably record production of 1.5-million bbl. of oil from the lease through waterflooding."

Activity throughout Osage County has helped make the area once again one of the state's best producing areas.

Operators are busy finding good shallow production in areas that literally have been riddled with holes over the last half-century.

A big boost to the county's excellent production status comes from the wide use of secondary recovery methods.

There are now more than 40 secondary recovery projects in operation in the county. The majority of these are waterflood and gas injection projects.

Waterflood oil comprises roughly 42% of the county's over-all production, says the Osage Indian Agency.

Gas injection and other projects account for another 16% of production.

Hence, the various secondary recovery projects account for well over half of the county's total oil production.

Service companies are doing a brisk business in the county, primarily in fracturing.

Most of the work is in fracturing older producers that have almost reached the stripper stage. And it's an almost uniform practice now to fracture new shallow producers before putting them on production.

While the big Burbank waterflood project, which covers 18,000 acres, gets most of the credit for helping Osage stay near the top, workover operations, in-field drilling, formation fracturing, and shallow wildcatting all have contributed to the boost in total production.

In spite of being drilled and redrilled from township to township, Osage still holds promise for the small producer.

It apparently is still possible—as recent successes indicate—to bring in a well good for 500 b/d or so, at a depth of from 2,000 to 3,000 ft.

Main pays in Osage County are all found at shallow depths, and include the Bartlesville, Layton, Burbank, Wilcox, and Arbuckle.

Last year, Osage accounted for more than 25.2-million bbl. of the state's 209-million bbl. output.

For several months last year, the county led all other counties in the state in production, only to slip to second place later in the year in the face of increased production from Garvin County (PW—Jun.13'58,p26).

The increased activity has meant much to the Osage Indians: The whole county is Indian reservation land, with the exception of the five principal towns.

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These aluminum structures are also saving money. That's because they are erected faster than concrete structures, with less site labor—and turn installation time into production time.

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What's New / IN EXPLORATION, DRILLING, PRODUCTION

Research Group Starts Great Lakes Survey

The newly-formed Great Lakes Geophysical Research Group has started a series of tests and surveys in the Great Lakes.

The survey group, consisting of U.S. and Canadian scientists operating from a Canadian Navy 400-ton ship, will make thousands of test borings to analyze lake bottoms, and will sample water from many levels for turbidity, temperature, and marine life.

Money for the survey was provided by a grant from the Canadian Dept. of Lands & Forests, and by a group of Canadian oil companies.

During test borings of lake bottoms, no attempt will be made to seek or prove petroleum or natural gas deposits (page 22). The borings will go down about 2 ft., and will seek to give biochemical histories of lake bottoms.

•

Calvert Drilling Co., Inc., has purchased the interests of An-Son Petroleum Corp. in gas-producing properties in Harper and Beaver Counties, Okla.

Included are ten producing wells and seven "proven" locations which will soon be drilled. The properties are in the Laverne and Highland fields.

Why Did the Fish Die?

It's been decided that seismic explosions at Chip Lake, Alta., haven't caused the death of fish in the lake. So operations can continue as usual.

A newspaper story associated the mysterious death of great numbers of Northern Pike with charges being set off by an exploration crew operating in the vicinity.

The Canadian Petroleum Assn. put the question to E. S. Heustis, Alberta Fish & Game Commissioner, who said that any relation between the seismic work and the death of the fish was remote. But they're still trying to find out why so many fish died.

The Colorado Oil & Gas Commission has approved a waterflood project for the D sand reservoir at Kejr field, Logan County.

Sinclair Oil & Gas Co. will be operator of the waterflood on the South Kejr unit, which was formed for the secondary recovery project.

•

Intex Oil Co. was high bidder at the June 11 sale of oil and gas leases on Colorado state lands.

The company offered $8.50 per acre for a tract north of Iles field, Moffat County.

A total of 81 tracts, covering 19,170 acres, were offered, of which 43 were leased.

•

The Louisiana State Senate has passed a bill giving the Louisiana Mineral Board authority over the administration of state leases.

The measure requires the register of the State Land Office to hold up acceptance of payments until the board checks the terms of the lease. The bill now goes to the House.

•

The Montana Legislative Council has been asked to help work out the market value of old 20-year leases when they are exchanged for the new indefinite-term leases.

The State Land Board made the request in approving a motion by Public Instruction Supt. Harriet Miller. She pointed out that a 1953 law provides for exchanging leases on the basis of the "full market value of the exchange."

"It will be essential," she said, "that methods be found for determining the terms on which lease exchanges will be made. Unless this is done, it appears likely that exploration and further development of state lands will be impaired."

•

Tekoil Corp. has bought Petroleum Technologists, Inc., a California laboratory and engineering service.

The acquired company will be merged with Reservoir Engineering Laboratories, which Tekoil acquired last year, to form a subsidiary bearing the name of PTI.

Engineering

A new hydraulic wire line setting tool has been developed by Halliburton Oil Well Cementing Co.

The new tool may be used in wells with or without fluid, says the company, because the necessary hydraulic fluid for operation is carried in the tool.

Only a light-duty-rig sand line is required to operate the tool in the well.

The tool contains a hydraulic jack with two pistons and cylinders. These are operated by the wire line that is used to run the packer or plug into the well. A back-pressure valve is located above the setting sleeve, so that hydraulic pressure applied to the sleeve by the pump is unable to release until the packer is set.

The company has also developed a cup-type bridge plug, which, it is said, eliminates the need for pump trucks during setting operations. It is designed particularly for high-pressure holes.

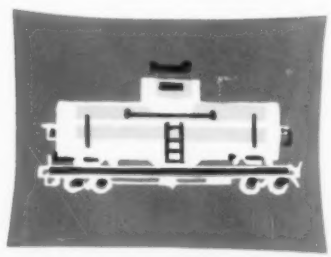
•

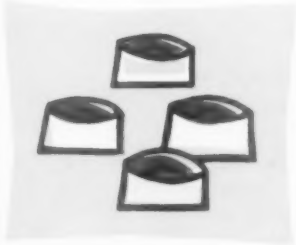
Drilling Highlights

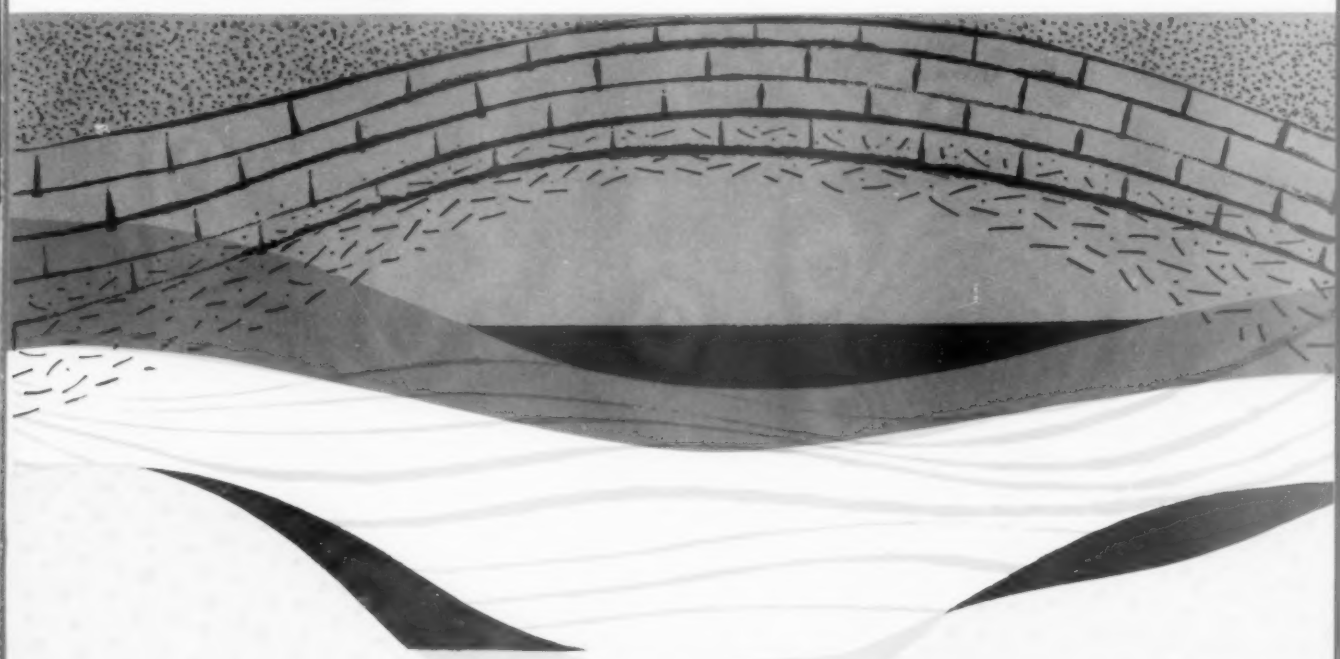
West Texas—The first triple oil completion in Texas has been approved by the Texas Railroad Commission. The well is the David and Inez G. Fasken No. 2-J Fee, section 5, block 42, T-2-N, G&MMB&A survey, Andrews County. The well flowed 319 b/d of 44-gravity oil, plus 40% water, through 20/64-in. choke and perforations at 8,436-672 ft. in the Wolfcamp, Fasken pool; 293 b/d of 46-gravity oil through 26/64-in. choke and perforations at 10,930-11,032 ft. in the Devonian, South Andrews pool; and 409 b/d of 52-gravity oil through 13/64-in. choke and perforations at 12,583-623 ft. in the Ellenburger, Fasken pool.

In Coke County, Lion Oil Co. division of Monsanto Chemical Co. No. 1 Sadie, section 12, Winfield Scott survey, was completed as a Strawn lime discovery, flowing 910 b/d of 41.8-gravity oil through 24/64-in. choke and perforations at 6,390-409 ft. The well is 2 mi. southwest of Bloodworth Strawn pool.

New Mexico—Sinclair Oil & Gas Co. No. 2-401 State-Lea, section 21-18s-35e, Lea County, was completed for 434 b/d, based on 11-hour flow of 200 bbl., through 12/64-in. choke and







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A mile-long unloading system for oil carriers—tank cars for corrosive jet fuels—quick, positive protection for valves and fittings—a Texas-size storage tank ...these are a few of the answers General American provides for problems in transporting, storing and marketing of liquids. If you require specialized service in any of these areas, you'll find it pays to plan with General American.

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Double handling and expensive barging were eliminated when General American's Plate and Welding Division erected twin 268,000-barrel storage tanks for Northville Dock Co. at Long Island Terminal, N. Y. The world's largest tankers (or any tanker presently contemplated) can moor safely in 70 feet of water more than a mile offshore—deliver cargoes direct. Each of these General American custom-engineered tanks is 200 feet in diameter, 48 feet in height. Together they provide storage for 22,500,000 gallons of oil.

NOW—FOR THE OIL INDUSTRY—LARGE CAPACITY TANK CARS

Important economies to shippers and carriers will result from a new concept of tank cars now being developed. Domeless cars of high volume capacity designed for the improved rail roadbeds of today are in the program. Prototype fleet for the petro-chemical industry now under construction is made up of domeless cars capable of carrying more than 18,000 gallons of product. Standardization in the neighborhood of 16,000, 18,000 and 20,000 gallons is proposed. When you are interested in large capacity cars, see your nearest General American representative.

NEW JOB FOR LITTLE BIG INCH!

This 1700-mile product pipe-line is in operation between Texas and General American's tank storage terminal at Chicago, Illinois. It links the world's largest refinery area with the expanding markets of the Middle West, assuring dependable, uninterrupted service. Shippers and marketers of petroleum products find the use of General American's tank storage terminal facilities can result in substantial reduction in inventory requirements and storage costs. General American provides six terminals at five key markets with more than 14,000,000-barrel capacity to serve industry.

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Federal tax supervision holds producers accountable for every gallon of ethyl alcohol they place in storage. When a major producer decided to store much of his output at General American's Carteret Terminal, this accountability posed no problem, because General American assumed the burden for him. Further, he was provided with a number of important services—such as metering, blending, denaturing and packaging. All this is accomplished with accurate record-keeping that solves a difficult marketing problem—an example of the way General American can take care of your needs and utilize its terminal facilities for your requirements.

NEW TYPE TANK CARS ON DEMAND

Scientists have a habit of making demands on industry that must be met at once. Jet fuels are an example. While chemists were working out the application of such powerful liquids as fuming nitric acid, hydrazine and hydrogen peroxide to missile propulsion, General American was making tank cars to carry these fuels. Today large quantities of these propellants are moved in GATX tank cars. This is typical of the forward-looking research program at General American. General American Transportation designs, builds and leases tank cars to carry liquids that range from molasses and wine to petroleum products and corrosive chemicals.

HAMER SELECTS KANIGEN FOR LINE BLIND VALVES

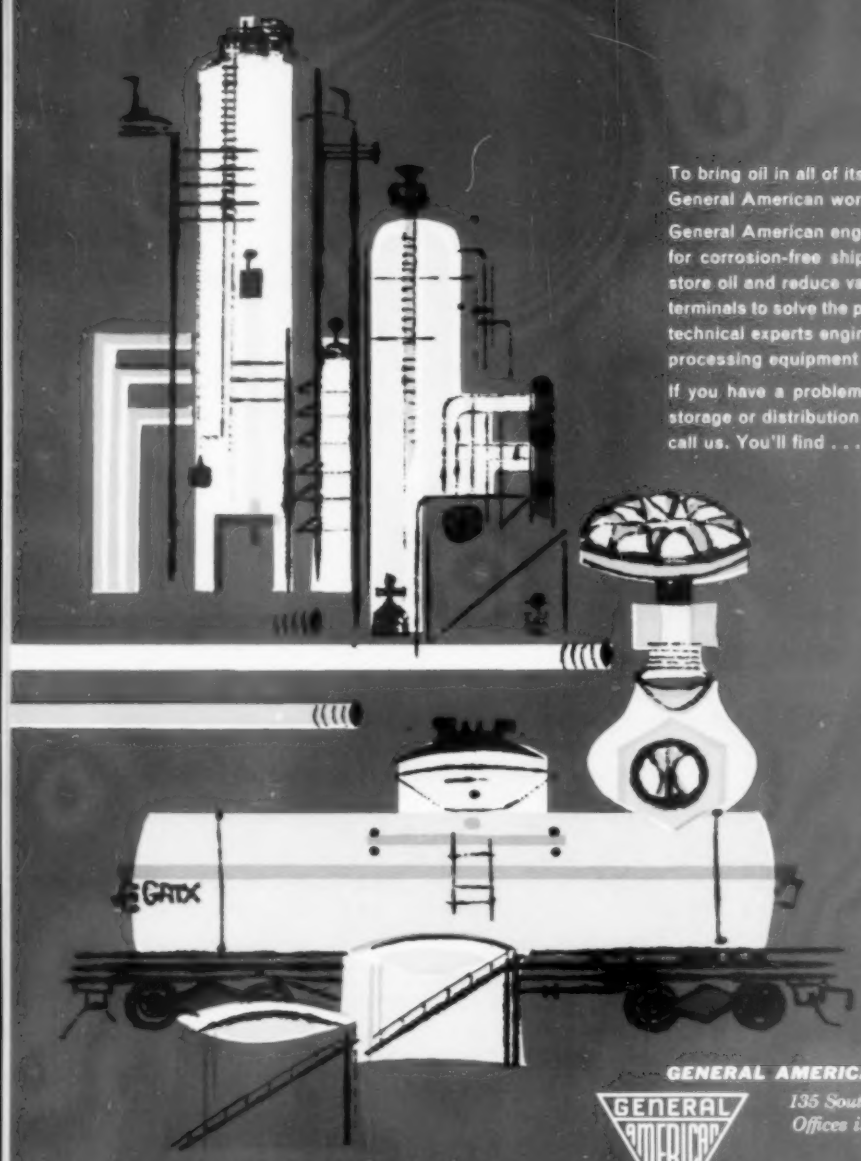
Hamer Valves, Inc. in 1936 originated the "line blind" as a means for permanent, positive shutoff in pipe lines. It provides for easy, quick one-man operation. When the line blind valve is used for corrosive liquids, quite often the protection of nickel is needed. So Hamer employs KANIGEN® nickel-alloy coating on all line blinds. "Application of the KANIGEN coating to our VISIBLE WEDGE line blind valves greatly increases the life of the valves," say the men at Hamer. You can coat anything from the inside of a 100-foot long dryer to a tiny relief valve with KANIGEN. For the "where" and "how" please use the information card.

TEXAS-SIZE STORAGE TANK

You could discharge the loaded capacity of a train of tank cars more than seven and a half miles long into Phillips Chemical Company's huge new storage tank at Cactus, Texas. Liquid is pumped into the tank (220 feet in diameter and 48 feet high) at the rate of 250 gallons a minute, yet it takes 37 days to fill its 323,000-bbl. capacity. Phillips' new tank was engineered, fabricated and erected by General American. General American has skilled crews and modern erection equipment available to facilitate construction of standard and custom storage structures anywhere in the U.S.

WHERE 45 YEARS' EXPERIENCE PAYS OFF

Forty-five years of experience are back of the design, engineering and production services of General American's Turbo-Mixer Division, and this knowledge pays off in solving any problem in this area. Whether you oxidize asphalt (Socony, Standard Ohio, etc.), or extract butadiene (Esso Standard, Polymer Corp.), or require a low-pressure polyethylene reactor (Celanese), or a continuous counter-current extraction column (Bakelite), a Turbo-Mixer can be designed for your exact needs. General American's new RDC (rotary disc contactor) liquid extractor adds high volumetric through-put efficiency to low operating cost. For information about every type of mixer or extractor, just mail information card.



To bring oil in all of its variety of forms to the consumer, General American works directly with petroleum companies.

General American engineers design new kinds of tank cars for corrosion-free shipment. Research men find new ways to store oil and reduce vapor losses. Development men build terminals to solve the problems of storage and distribution, while technical experts engineer special petroleum products processing equipment that anticipates tomorrow's needs.

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- ☐ Gas Conservation Structures and Gas Handling Equipment
- ☐ Kanigen® Coating
- ☐ Custom Fabrication and Field Erection
- ☐ Please have a General American Engineer call for an appointment

perforations at 11,726-56 ft. The Devonian lime discovery is 1 mi. northwest of other Devonian production and ¼ mi. west of Sinclair's recent Bone Springs discovery.

Nebraska—Chandler & Simpson No. 1-G Rodman, section 24-15n-55w, Kimball County, flowed 235 b/d through perforations in the J sand at 5,917-24 ft. and 5,926-27 ft. The well is 1 mi. northeast of Owasco field.

Nevada—Bonanza Oil Co. No. 1 Consolidated Government, section 31-21s-60w, Clark County wildcat, has had shows of oil in cuttings, with an unmeasured flow of gas from 1,600-30 ft. Nevada's only production is in Nye County.

Wyoming—Ohio Oil Co. No. 1 pre-Tensleep Unit, section 18-46n-98w, Hot Springs County Madison (Mississippian) discovery, was completed on the pump for 344 b/d of oil and 34 b/d of water through perforations at 4,439-580 ft. The discovery is the first in the 44-year-old Grass Creek field to go below the Tensleep (Pennsylvanian).

Oklahoma—Sinclair Oil & Gas Co. No. 1 Holcomb, section 7-28n-22w, Harper County Arbuckle (Ordovician) discovery, flowed 400 bbl. of 48.5-gravity oil in 14 hours through perforations at 7,664-717 ft. Nearest Arbuckle production is 40 mi. northeast, in Yellowstone pool, Okla.

Texas Panhandle—Humble Oil & Refining Co. No. 1 Ellzey D. Vanderburg, section 165, block 45, H&TC survey, 3 mi south of Hansford field, Hansford County, was completed as a Morrow gas-distillate discovery, flowing 35-million ft. of gas daily plus 9.8 bbl. of distillate per million through perforations at 7,060-88 ft.

North Texas—G. E. Penn No. 1 G. R. Killian, J. Diaz survey, A-1045, Clay County, a reentry project, was completed as a Caddo discovery in Northwest Newport Bryson pool, flowing 360 b/d of 42-gravity oil through 10/64-in. choke and perforations at 5,638-48 ft.

South Louisiana—British-American Oil Producing Co. No. 1 Levert Heirs, section 28-8s-11e, West Baton Rouge Parish, was dually completed for 98 b/d of oil through perforations at 9,476-95 ft. and 238 b/d through perforations at 9,524-50 ft.

Louisiana Offshore—Cities Service Oil Co. No. 1 State Lease 2715, Block 45, Main Pass Area, was completed for 145 b/d of 32.8-gravity oil through perforations at 8,772-76 ft.

Arkansas—David Crow, Trustee, No. 2 N. S. Yarbrough Unit, section 7-15s-19w, was completed as a Rodessa discovery in the Stephens pool, Ouachita County, pumping 45 b/d of 29-gravity oil through perforations at 3,271-75 ft.

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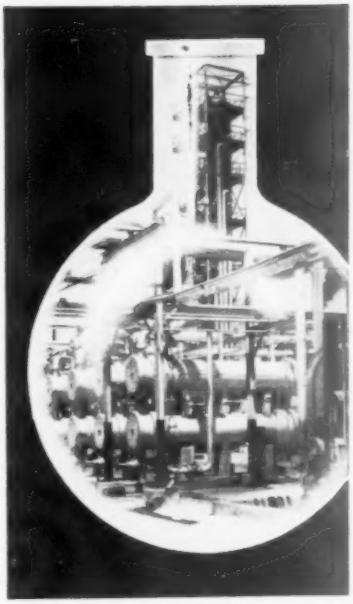
▸ Don't be concerned if you still continue to receive wrapped copies for a few weeks; it will take us several issues to complete the changeover.

Harry Waddell, *Publisher*

Oakite ECP . . .



Best way to clean a

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CASE HISTORIES document that the best way to clean a catalytic reformer is the Oakite ECP way . . . which recommends *chemical circulation*. For one important refinery, the program slashed five days time on reformer towers alone, saved $3,300 on cost of former cleaning method.

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For Heavy Duty
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For Heavy Duty
in Moderate Corrosion

HEATREAT #1 CM
For Medium
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Where Corrosion
is No Problem

A rod for every well condition

If your purchasing system calls for "high tensile" rods from companies A, B and C rather than specifying exact rod grades, your rod strings are costing too much.

For example, Continental-Emsco medium-priced Type 5 rod can handle the same loads of many so called "high-tensile," higher-priced rods. Why? Because, Type 5 contains VANADIUM . . the amazing element that strengthens the rod, so it has greater load-carrying capacities than rods of similar properties *without* vanadium.

Call your C-E man. Talk over your rod requirements . . well conditions. His recommendations will reduce your pumping costs by (1) matching well conditions with the *right* rod, and (2) by giving you *higher quality* for longer service.

D+B API SUCKER ROD COUPLINGS

Strengthen this vital link

All Continental-Emsco sucker rod couplings are *lubrized* to protect coupling threads against corrosion and damage during make-up. These couplings are induction hardened for longer life and *100% inspected* before shipment . . to assure proper field make-up and your complete satisfaction.

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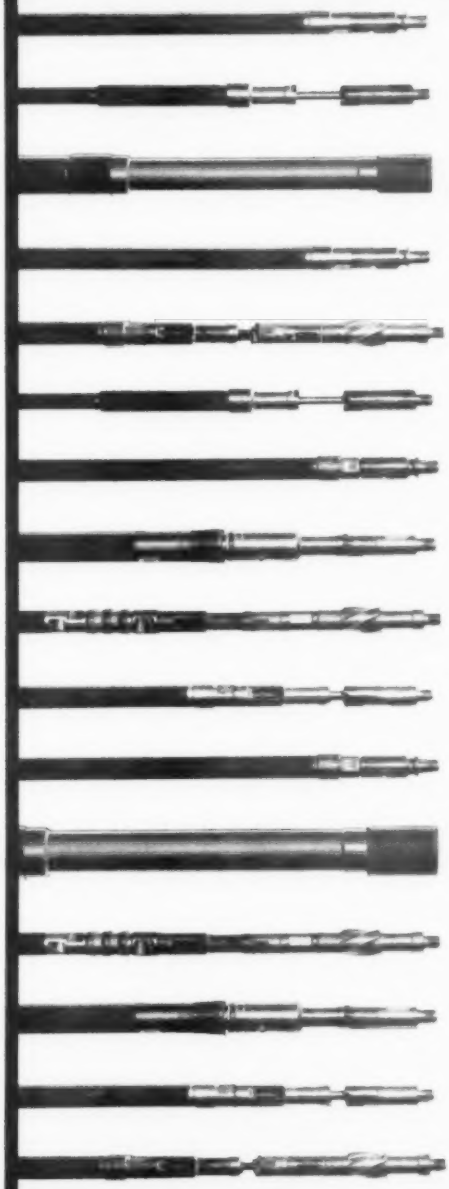

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D+B SUBSURFACE PUMPS

Assembled just for your well

The profit squeeze is on. No longer can you afford the luxury of *standard* pump assemblies.. often with metals of poor corrosion resistance, weak intermediate parts, or misapplication of pump materials.

Now, you need to take advantage of the full range of Continental-Emsco subsurface pumps ..37 types with over 700 variations. There's one to pump every well, efficiently and economically, regardless of depth, type of hole or corrosive, abrasive or gaseous conditions. Talk over your pump requirements with your C-E man.

Be sure to take advantage of C-E subsurface pump repair shops.. located in producing fields everywhere.

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Specify THE ECONOMY PRODUCTION TEAM

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Your Continental-Emsco man sees that you get the *right* unit pumper for the job. He sees that it is *properly applied* with the right stroke length for maximum pump efficiency .. with the right strokes per minute to reduce rod failures and prevent excessive wearing of gears, belts and bearings.

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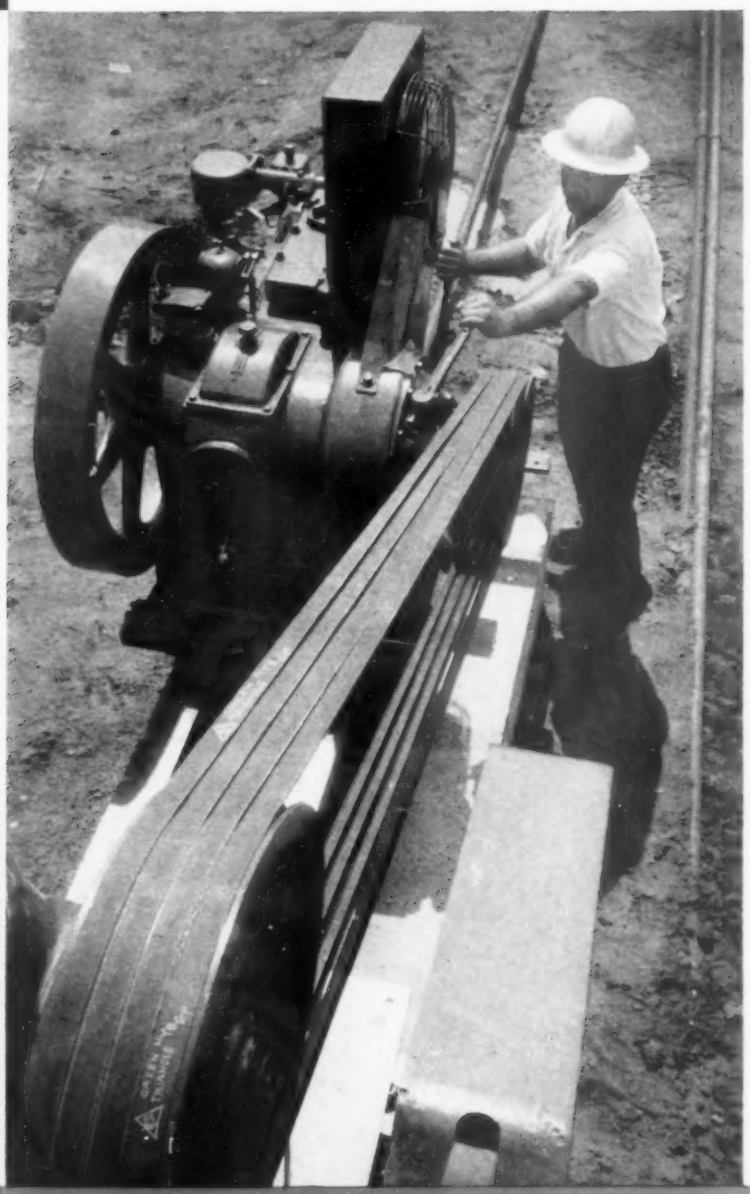

GREEN TRIANGLE V-BELTS

Recommendations of your C-E service man on tension, alignment and operating conditions will greatly increase belt life. His advice as to the number of belts to use assures maximum power transmission and often cuts initial costs.

Proper belt adjustment is easy with GREEN TRIANGLE V-BELTS . . sold in *matched sets.* Since each belt is identical in diameter, length, thickness, material and freshness with others in the set, adjustment for one assures uniform adjustment for all.

New York Belting and Packing Company packs Green Triangle V-belts in matched sets . . *a performance plus feature* that costs no more . . exclusively at Continental-Emsco stores.

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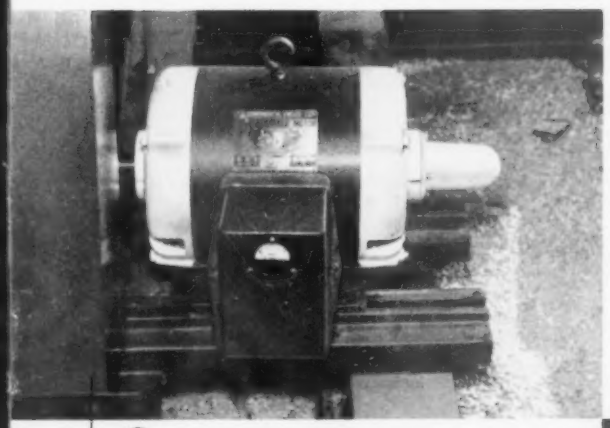

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BIG ITEMS . . or small

Each Continental-Emsco store is individually stocked to meet the requirements of localized fields, so regardless of your lease location, you'll find all the items needed to do a better pumping job. Specialists are readily available to advise you on well-maintenance problems . . how to keep your production costs in line.

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This motor fits your pumping needs . . will cut your production costs. It's *oil field* tough . . *oil field* proven . . with Continental-Emsco *dependability* built-in.

Learn to rely upon your C-E stores for lower-cost production . . and *for equipment that hums . . service that sings.*

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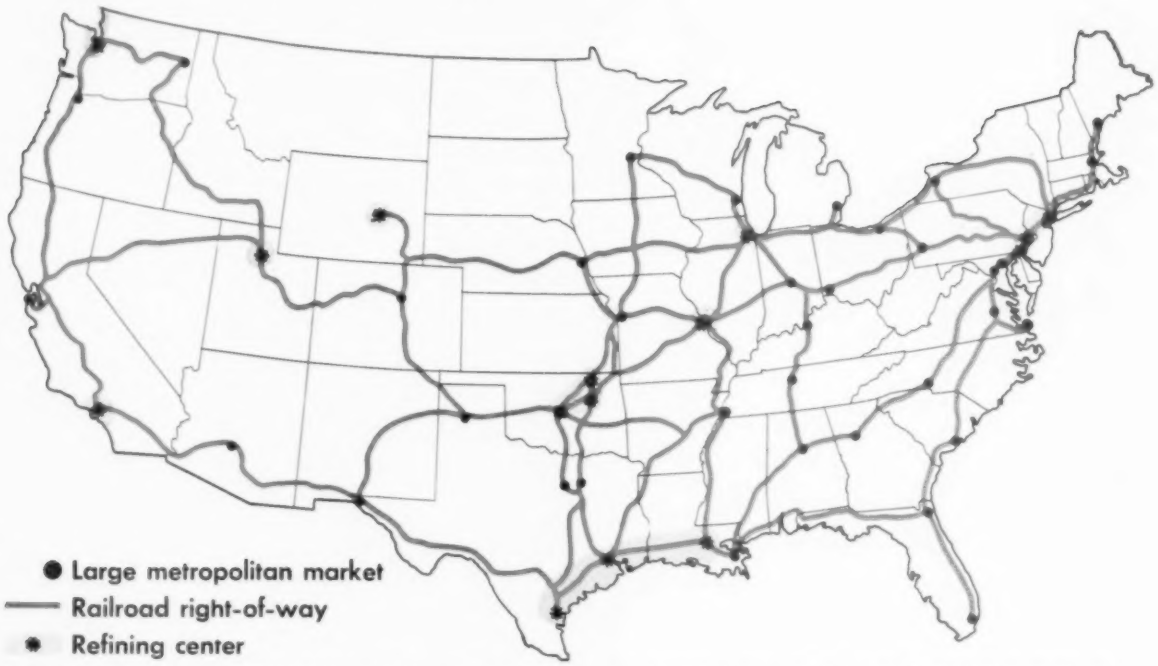


RAILROAD RIGHTS OF WAY linking refining centers and markets are becoming more attractive product pipeline routes as . . .

Economics Draw Rails, Pipelines Closer

All signs point to more railroads getting into the product pipeline business.

So far, the railroads' move into pipelining has been a cautious one.

The Northern Pacific Ry. had ownership participation in a trans-Montana products line built in 1953.

In 1955, Southern Pacific R.R. Co. set up Southern Pacific Pipe Lines, Inc., to build and operate a products pipeline from El Paso, Tex., to Tucson and Phoenix, Ariz., and another line from Los Angeles to Phoenix, Tucson, and Arizona air bases. Last year the system was expanded with a line from Richmond, Calif., to Reno, Nev.

Great Northern Railway Co. "has plans" to build a 400-mi. crude line from Bismarck, N.D. to Minneapolis. And the Missouri-Kansas-Texas R.R. and the New York Central R.R. have proposed an LPG line from the Southwest to eastern markets.

But one of the important points made at the pipeline division meetings of the American Society of Civil Engineers convention in Portland, Ore. this week was this: It makes good economic sense for more railroads to get into the product pipeline business, and for some, the sooner the better.

Railroad management's interest in pipelines is increasing for several reasons, but most of all because it is trying to find a more satisfactory method of transporting the petroleum products that have been moved by tankcar.

E. H. Schmidt, a Tulsa consultant, told ASCE's pipeline division that, for one thing, some railroads feel they "missed the boat" in not participating in the building of the nation's crude-line network, and that these roads wouldn't like to miss such an opportunity again.

John G. Montfort, field superintendent of Southern Pacific Pipe Line's western district, hit the bedrock issue of railroads-in-pipelines when he presented the Southern Pacific reasoning which led to its entry into product pipelines:

"By 1954, consumption of petroleum products in the Riverside-San Bernadino area and the Imperial Valley of California, and in the Phoenix-Tucson area, had grown to an extent warranting pipeline transportation from the refining centers of Los Angeles and El Paso. . .

"The Southern Pacific management, believing the company should be an integrated transportation company, able to offer the shipping public the most efficient method of transportation, began seriously to consider construction of a pipeline.

"Of course, the hard fact that tank car movements would be lost to a pipeline was a factor. The company reasoned loss of this business was inevitable, so it was preferable to lose the business to its own pipeline."

Many railroads are in excellent position to get into product pipelining because of their rights of way, which already link existing refining areas to markets.

One look at the map above shows how extensive this linking is from coast to coast.

Schmidt put it this way:

"Geographically, railroads are in an excellent position to enter the [pipeline] business. They own thousands of miles of rights of way along the routes future pipelines will logically follow. . ."

The railroad rights of way can also mean important savings in pipeline construction costs. Said Schmidt: "It is quickly apparent that, as a result of recent upward surges in land values and corresponding increases in costs of rights of way . . . the availability of railroad right of way is particularly attractive."

He listed these as major savings

when railroad rights-of-way are used for pipelines:

- "There are savings in construction costs in that the right of way does not have to be cleared.
- "Pipe unloading, hauling, and stringing costs are at a minimum.
- "The railroad telephone and telegraph communication systems may be available for construction and operations."

A few weeks ago, the Wabash R.R. Co. offered 100 pipeline companies rental of its right of way which links Detroit, Chicago, St. Louis, Kansas City, Mo., Des Moines, and Omaha. But Wabash has no intention of getting into the pipeline business.

The company says it got several interested responses from pipeliners.

However, the right-of-way factor is not a magic key which opens wide the doorway into the pipeline business for railroads. After all, available right of way is not necessarily usable right of way.

Schmidt said that Southern Pacific's Northern California pipeline used the company's right of way for only 40% of its route. And the proposed Katy-New York Central line, Schmidt pointed out, may only use the railroads' right of way for about 50% of its length.

This is largely because much of the railroads' right of way is through areas too congested for laying pipe. (Schmidt says cities with more than 20,000 people should be circumvented by a pipeline, and that even some smaller cities, if they have forbidding obstacles on the railroad right of way, should not be traversed.)

Also, railroad rights of way are suitable for occupancy by pipelines only when the title to these rights of way is assignable free of encumberance.

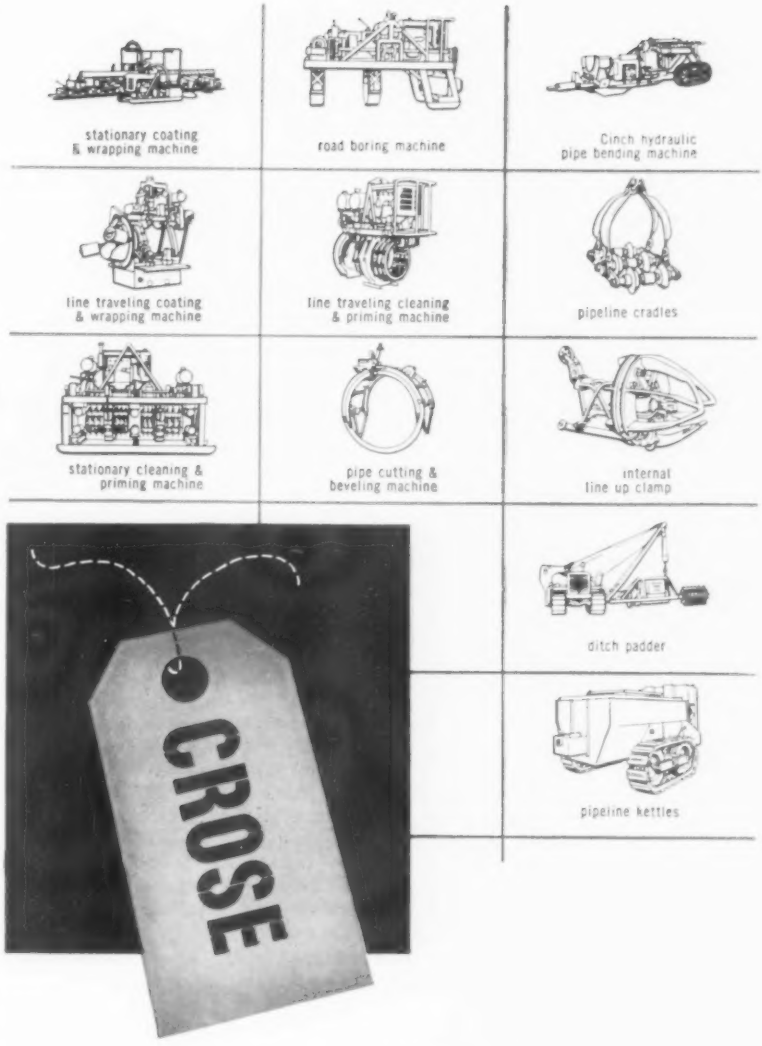
Even when railroad right of way is used for a pipeline, location engineers can run into some mean problems.

Schmidt told the ASCE pipeliners that two problems perpetually confront the location engineer on railroad pipeline projects: (1) On which side of the railroad should the pipeline be located? (2) How far from the center of the track should it be built?

The answers, Schmidt pointed out, depend on the many conditions along the route.

He also told the pipeliners that two unusual construction conditions are common to railroad pipeline construction:

(1) Construction must proceed alternately forward and backward; and (2) because working space is often too narrow, laying crews frequently work over the soil bank.



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At Crose the word "quality" means two basic things. First, that the equipment has been engineered and designed to perform under the toughest conditions. Secondly, that the equipment will deliver long-term performance with maximum efficiency and lowest maintenance costs. That's the kind of quality you get in Crose equipment — and it's available through many strategic supply points.

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Esso Streamlines Waterway Operations

"Streamlining to meet modern competitive conditions"—that's what the current emphasis on efficiency in Esso Standard Oil Co.'s inland waterways department might be called.

The department's efficiency drive, a good hard look at how to do the job of moving crude and products on inland waterways better, yet more economically, isn't just a recession-time belt-tightening—although its results may appear particularly interesting in this keep-costs-down period. The plan is a long-range blueprint developed during the past few years to match the advances in efficiency being made by other modes of crude and product transportation.

Such advances, especially in pipeline operation, have been largely responsible for the declining use of inland waterways for moving crude and products (PW—Nov.15'57,p36).

(In 1956, water carriers moved only 29.3% of the total amount of crude and products transported in the U.S.; this was down from their 1953 percentage of 31.7% and their 1950 percentage of 34.6%.)

J. E. Stoveken, general manager of Esso's inland waterways department, told PETROLEUM WEEK last week how the department is carrying out its plans:

A good deal of the "streamlining" has already been accomplished. A broad organizational revamping, for instance, has resulted in centralized, more efficient, and more economical accounting procedures.

Accounting for all of the department's operations was moved to New York, instead of being carried on largely in the department's three branch offices.

Also, barge crewmen were switched to a monthly salary basis from an hourly basis, simplifying much of the bookkeeping and making it easier to work with modern business machines. The department will soon have IBM 705s to work with.

Careful study of the department's statistical summaries resulted in fewer, but more analytical, statistical reports. These are providing the basis for many of the "Streamlining" decisions.

The department also set up a new group to study inland waterways shipments, a division called the economic and technical division, which has been responsible for several important economies.

More specifically, a new plan for running Esso's New York Harbor tugs has cut operating costs by $500,000 annually.

Esso formerly had seven tugs—some diesel, some steam—operating in the harbor for docking, bunkering, and making deliveries to terminals.

After studying the pattern of the tugs' operations, it was decided to run four tugs full time, and to charter any other tugs needed during operational peaks.

The annual chartering costs for the extra tugs—$500,000—compares favorably with the $1-million annual cost of running the three tugs that have been taken out of service.

Other cost-savers: increasing use of higher-speed, smaller-crew waterway carriers, and a swing toward integrated tows for river traffic.

Esso's inland waterways department is looking with increasing favor at new push-tows, which operate with smaller crews than present restricted-water vessels.

Esso recently replaced an eight-barge tow on the Mississippi with a new 92,000-bbl.-capacity integrated tow, for greater flexibility. Another integrated tow of the same size will be ready for the department's use in October.

What's New / IN TRANSPORTATION

Look for more expansion by Texas Eastern Transmission Corp. in the field of product transportation.

Texas Eastern, which recently completed reconversion of the Little Inch line from natural gas to products service, has earmarked an additional $20-million for product transportation facilities.

The company says it plans "certain delivery and terminal facilities and other storage and auxiliary petroleum products facilities."

•

For the seventh consecutive month, no new tanker orders were placed in American shipyards in May. According to the Shipbuilders Council of America, tanker building in the U.S. has slipped this badly.

In May, 1957, there were 86 tankers on order in U.S. yards, for a total of 3,512,735 tons. Due to cancellations and commissionings, the total at the end of this May had fallen to 69 tankers and 2,848,200 tons.

•

Service Pipe Line Co. has awarded three contracts for pipeline construction in Wyoming to O. R. Burden Construction Corp.

The three projects are part of Service's program to increase its crude-carrying capacity in this Rocky Mountain area by about 40,000 b/d.

Service is also planning crude line expansion projects in Colorado and Kansas.

About 11,500 hp. will be added to Service's 870-mi. system in the expansion program.

Burden will lay 17 mi. of 12-in. pipe north from Service's Casper pump station to its Salt Creek station, both in Natrona County, and 30 mi. of 12-in. line to connect the Salt Creek station with the North Fork field, in Johnson County. Burden will also take up and recondition the pipe from Service's 12-in. line between the Ft. Laramie station and Glendo Junction.

•

American Louisiana Pipe Line Co. has received a Federal Power Commission examiner's approval of its $7.5-million expansion plan.

The proposed expansion, if approved by the Commission as expected, would increase American Louisiana's system capacity by 35.7-million cu. ft. of gas daily to 357-million cf/d.

At the same time, a related request by Panhandle Eastern Pipe Line Co. to abandon sale of gas to Michigan Consolidated Gas Co. of Detroit which is also served by American Louisiana, was denied.

•

Shell Pipe Line Corp. will link its Norco (La.) pipeline headquarters with two Gulf offshore drilling areas by microwave.

Shell will use a standard Radio Corp. of America CW-20A system, which will provide voice, teletype, and remote supervisory control connections with two Shell-leased drilling areas, block 27 and block 69, offshore from Venice, La.

Many of these huge tankers make trips of three to four-hundred miles per day over highways which subject them to almost continuous shock and vibration. USS "T-1" Steel is relied upon to provide brawn as well as bonus payload.

Simple arithmetic with USS "T-1" Steel:

3,470 lbs. deadweight saved = 815 gals. more payload per trip!

That's the story in a nutshell of this mammoth LPG transport, manufactured by Trinity Steel Company of Dallas, Texas. Its 9,000-gallon tank is fabricated entirely of USS "T-1" Steel, and weighs only 12,130 lbs.—a reduction of 3,470 lbs. Translated into gallons of propane, 3,470 lbs. saved equals 815 extra gallons of payload carried. Thus, a transport making 300 trips a year can haul 244,500 more gallons than a unit of conventional design.

Since a hauler nets about one dollar per year per pound of deadweight saved, and the life of the tanker will be about 10 or 12 years, a weight saving of 3,470 lbs. will amortize the cost difference of "T-1" Steel several times over.

Trinity Steel manufactures three sizes of "T-1" Steel tanks, each custom-made to fit the gross weight requirements of the state or states in which it will operate. The tank shown here is 7 feet by 34'4". Working pressure is 250 psi, although tested out at 500 psi. Thickness of the "T-1" Steel shells is only .419" and the heads .250". All parts are made of USS "T-1" Steel, including the shells, heads, openings, fittings and all the structural padding. No other material is welded directly to the heads or shell of the tank.

Even larger "T-1" Steel tanks are being built—over 10,000 gallons—for use in states where gross weight laws permit.

The very high yield strength of USS "T-1" Steel, coupled with its exceptional toughness down to very low atmospheric temperatures, and its ready weldability (normally without preheating or stress relieving) make it ideal for pressure vessels, tanks, standpipes and penstocks. Welded ½-inch-thick test vessels of this remarkable steel have withstood working stresses of as much as 136,000 psi without bursting—even when chilled to 50° below zero. And where code provisions do not apply, large "T-1" Steel vessels in service today operate at working stresses of 36,000 and 40,000 psi!

USS "T-1" Steel is available for immediate delivery. It might very well be the answer to your pressure problem. For complete information, write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS and "T-1" are registered trademarks

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

USS United States Steel

More Reactions to 'No Tax Give-Away for Oil'

I want to take this opportunity of expressing to you my sincere appreciation for the very aggressive but scholarly manner in which you arose to the defense of the petroleum industry and the greatly misunderstood matter of percentage depletion [PW—May23'58,p62].

I don't know whether we will ever be able to make enough people understand the principles of this matter to get it out of everyday politics, but certainly with the help of you and others we may some time be able to get the facts of our story over to businessmen like Mr. Strauss.

R. W. McDOWELL
PRESIDENT
D-X SUNRAY OIL CO.
TULSA, OKLA.

I believe you helped the industry in your quick answer, and I certainly hope you will continue to do so, whenever you see fit.

T. S. PETERSEN
PRESIDENT
STANDARD OIL CO. OF CALIFORNIA
SAN FRANCISCO, CALIF.

The fervor and spirit which shows through your answer is something all of us in the oil industry should emulate in these times. You have performed a real service . . .

HERMAN P. PRESSLER
DIRECTOR
HUMBLE OIL & REFINING CO.
HOUSTON, TEX.

. . . certainly covers the major points involved in this matter in a clear and concise manner. Such prompt action should go far in promoting a better understanding of some of the industry's problems. We need more such action.

A. O. SAVAGE
COMPTROLLER
STANDARD OIL CO. (N. J.)
NEW YORK, N. Y.

. . . I think we are all coming to realize that, unless we are willing to react fast to the many ill-considered attacks made on our industry, we are not going to make the needed kind of progress in our public relations. On the other hand, forcible factual rebuttal can do much to make people hesitate before commencing ill-founded attacks.

Your prompt reaction to the WMCA broadcast is a good example of this.

ROBERT H. SCHOLL
VICE-PRESIDENT
ESSO STANDARD OIL CO.
NEW YORK, N. Y.

A direct approach to our critics, such as you have accomplished in your letter to Mr. Strauss, could be a guide which all of us could follow whenever we encounter criticism of our industry.

OLIN R. PRATHER
PRESIDENT
ROTARY ENGINEERING CO.
MIDLAND, TEX.

. . . a thoroughly convincing refutation . . . by far the finest clarification of the misconception of "tax advantages" provided by our government to the petroleum industry . . .

R. ELMO THOMPSON
PRESIDENT
THE FIRST NATIONAL
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TULSA, OKLA.

I think you did a magnificent job in presenting the case, and you are to be complimented for the forthright position taken.

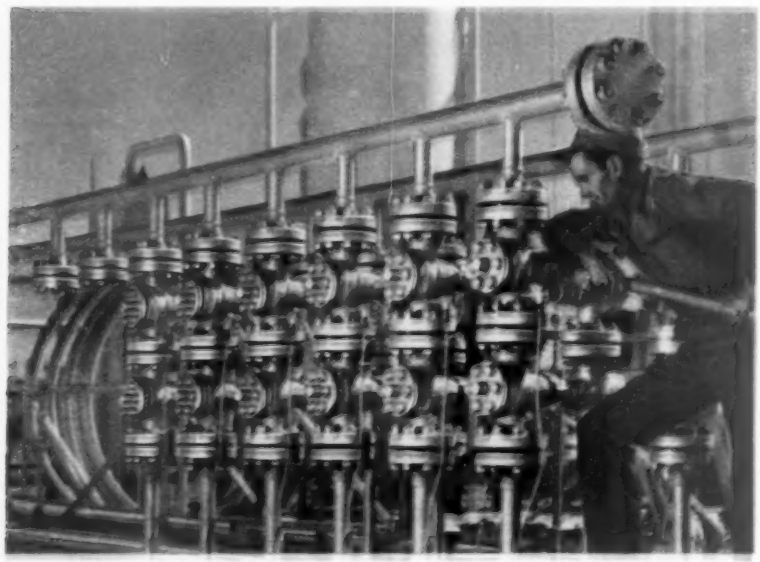
L. D. (RED) WEBSTER
VICE-PRESIDENT
PUBLIC RELATIONS-ADVERTISING
LONE STAR STEEL CO.
DALLAS, TEX.

It was perfect. Congratulations.

JOSEPH P. WALSH
GENERAL COUNSEL
SINCLAIR OIL CORP.
NEW YORK, N. Y.

PETROLEUM WEEK will publish from time to time comments from readers on timely, pertinent subjects. Expressions of opinions are welcomed; they should be kept as brief as possible.

Address all such correspondence to LeRoy Menzing, Editor, PETROLEUM WEEK, 330 W. 42nd St., New York 36, N. Y.



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DU PONT *Petroleum Chemicals* NEWS

Number 88 in a Series of Bulletins for the Petroleum Industry

JUNE 1958

$20 worth of FOA-2 saves $800 mechanical de-sludging job...with no downtime

Chemical industry's demand for oil grows

"Dacron"* an example of volume consumption

Uniforms of DuPont "Dacron" polyester fiber have been widely adopted for service station attendants. The garments are remarkably acid-resistant, can be washed or dry-cleaned, and are unusually durable. What's more they *hold* creases, *resist* wrinkling, *stand up* under the rigorous routine of the busy service station.

Huge quantities of other synthetic fibers, such as nylon, also are made from oil. In fact, petroleum products have in recent years become such an important source of raw materials that many chemical companies, DuPont included, have located plants in refining areas so as to be near an ample source of petroleum-derived raw materials.

*"Dacron" is DuPont's registered trademark for its polyester fiber.

When sludge fouls oil storage tanks, filters, strainers, lines and nozzles, there are two remedies. One is to remove the sludge mechanically and manually. This means downtime and considerable other expense.

The alternate way is to clean the system chemically. This is far cheaper, and there's *no downtime* involved.

The economy and effectiveness of this method are exemplified by a recent case history:

DuPont FOA-2 is added to residual fuel as it's pumped into sludge-laden tank.

A power plant serving two industrial laboratories burns between 1,000 and 1,500 gallons of residual fuel daily, drawn from a 50,000-gallon storage tank.

6 inches of sludge

Recently, it was discovered that six inches of sludge had accumulated in the bottom of the tank.

A tank cleaning firm was called in. A firm estimate of $800 was obtained for cleaning the tank mechanically. Considerable downtime would be required.

But since a constant temperature

ADVERTISEMENT—Prepared for the Petroleum Chemicals Division of E. I. du Pont de Nemours & Company (Inc.)

OVER

DU PONT *Petroleum Chemicals* NEWS

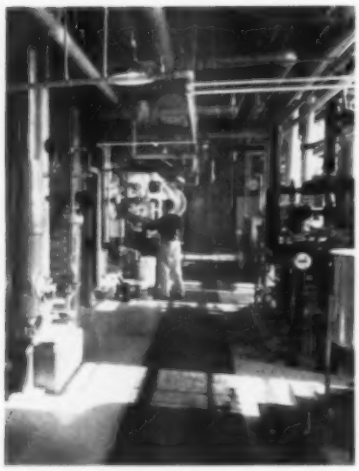
CONTINUED

$20 Saves $800

had to be maintained in the laboratories, the power plant could not afford the downtime. Looking for an alternative, the power superintendent decided to try dispersing the sludge with DuPont Fuel Oil Additive No. 2 (FOA-2).

Constant operation

$20 worth of FOA-2 was added with the next load of fuel oil delivered. A week later, no sludge could be detected. And the tank was in continuous use during the clean-up period.



THIS IS THE POWERHOUSE that *had* to maintain service, so that essential temperature control, in the laboratories it served, could also be maintained.

At the end of the week, throughout which time boiler room operations were completely trouble free, it was found that the entire sludge accumulation had been dispersed and burned with the fuel.

Sludge prevention

In addition to sludge removal, *prevention* of sludge formation is another important function of DuPont FOA-2. It is an excellent stabilizer and solubilizer, as well as a dispersant, for all types of fuel oils.

Being nonmetallic, this additive burns completely with the fuel, leaving neither ash nor other residue.

For more detailed information about DuPont FOA-2 and its use as a tank-cleaning agent, get in touch with one of our sales offices listed at right. They have a new FOA-2 booklet, and Technical Memorandum 317 which contains a number of case histories.

How one refinery solves residual sludge problems with Du Pont FOA-2

In the heating plant of a midwest refinery, residual fuel with 40% BS&W, most of which was "coke," was being used. Frequent cleaning of the storage tank was required to prevent the nozzles from clogging and the burners from flaming out.

FOA-2 tried

Following one of the clean-outs, DuPont Fuel Oil Additive No. 2 (FOA-2) was added to the incoming oil stream to disperse sludge residue and stabilize the fresh oil supply.

BEFORE FOA-2—This picture shows a typical instance of nozzle fouling caused by sludge in residual fuel.

AFTER ADDING FOA-2—Nozzles stay clean, burner operation is improved, and tank contents remain free of sediment.

The results were gratifying. After the additive was used for three weeks, there was no detectable sludge in the storage tank. Normally in this length of time the sludge level would have built up in the tank sufficiently high to cause pumping difficulties.

Flame pattern improved

When the burners were examined, the flame pattern was found to be better. Also, fewer ash deposits were found in the furnace and the over-all burner operation was improved.

This money-saving improvement and the elimination of frequent, costly cleanings resulted from the highly efficient dispersing, stabilizing and solubilizing qualities of DuPont FOA-2. It can equally well improve the distillate fuel oils you sell or use yourself.

A recently-published booklet on FOA-2 contains all the basic information on the many varied applications of FOA-2. There is also a bulletin of case histories that you will find of interest—our Technical Memorandum No. 317. You can obtain this literature by writing or contacting the nearest DuPont Petroleum Chemicals Division sales office.

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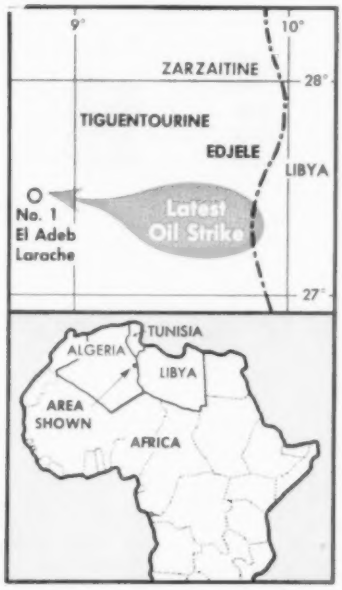

CREPS WILDCAT finds oil in new structure, and under hot Sahara sun topographer near Zarzaitine field charts area where . . .

Sahara Oil Potential Grows

PARIS—The growing oil potential of the Sahara Desert may have been boosted another notch by a Shell affiliate's discovery of a new oil-bearing structure, tapped by its latest wildcat southwest of the three fields it has established so far next door to Libya.

The wildcat is No. 1 Adeb Larache, which, Cie. de Recherches et d'Exploitation de Petrole au Sahara (Creps) announced last week, found oil 25 mi. southwest of Tiguentourine (map).

According to present indications, the company said, the well is located on a structure covering more than 9 sq. mi.

The company, owned 35% by Royal Dutch Shell, made the Sahara's first commercial oil discovery, at Edjele, in January, 1956. Even though the Creps discoveries individually have not compared so far with the much more impressive Hassi Messaoud field, some 340 mi. to the northwest, discovered by two other French companies.

The new No. 1 Adeb Larache wildcat flowed 42-63 bbl. of crude per hour, together with an unspecified volume of gas, on a series of drill-stem tests of the 4,101-86 ft. interval in an unspecified formation, according to the company.

Earlier, the wildcat had encountered gas at about 2,067 ft. in the Devonian F-3 reservoir.

The well has not yet been completed, and Creps is cautious about indicating its commercial potential.

The company is now also preparing for production tests at 2,833 ft. in another wildcat some 35 mi. to the southeast. That well, the No. 1 Oued Oubarakat, found oil traces in early April in the Devonian, topped at 2,620 ft. It has since been carried to 5,376 ft. in the Ordovician, where it encountered salt water.

At this stage, the company estimates the producing capacity of the three fields it has established so far at 100,000 b/d to 120,000 b/d.

Of this, it is planning to produce 50,000 b/d at Edjele, just a few miles from the Libyan border.

As now outlined, the Edjele field is some 18½ mi. long and 4⅓ mi. wide. To date, the company has completed 28 producers out of 31 wells drilled there.

Tiguentourine was discovered a year ago, about 45 mi. west of Edjele. Of 13 wells drilled there to date, 11 have been completed as producers, of which seven are oil wells and four are gas wells.

The Zarzaitine field was discovered last January, roughly 40 mi. north of Edjele along the Libya border. Creps has now completed five producers there, including three oil wells and two gas wells. The producing horizons, at around 4,500 ft., are deeper than those of the first two discoveries, and appear to be more prolific.

The company currently estimates recoverable reserves at 40-million metric tons from each of the three fields—a total of roughly 300-million bbl. But it emphasizes that this is only a rough estimate for Tiguentourine and Zarzaitine, which have not yet been fully outlined.

No final decision on the route for a pipeline outlet to the Mediterranean has yet been made by the politically troubled French government, and the Creps wells remain shut in pending construction of a projected 16-in. line.

Three different routes for the line had been examined by three past French governments—via Tunisia, via Libya, and via the central Algerian Hassi Messaoud field. From the latter, a 24-in. pipeline to the Algerian coast is now under construction.

According to one official, the government was about to announce its choice of the Tunisian route just before French forces bombed a Tunisian border town last winter.

The De Gaulle government also favors this route, choice of which could now mean a further patchup of French-Tunisian relations.

The attractive force
of gravity to be of greatest benefit
must be clearly interpreted
and the data must be accurate.
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In Venezuela:

15-Year Ratio Totals 56-44

CARACAS—After 15 years of application, Venezuela's "50-50" oil formula favors the government over oil companies in an accumulated percentage ratio of 56-44.

Figures published by the Ministry of Mines & Hydrocarbons in a new analysis, together with reports of earlier years, show accumulated government oil income of $6.6-billion in the 1943-57 period, including $765-million in bonuses for new concessions. Net company profits totaled almost $5.3-billion. (Bolivar figures are converted at the oil rate of Bs 3.09-$1.)

Bonus payments and exploration taxes on new concessions make up part of the difference.

These are added to government revenues, but they are not deductible from company earnings in applying the 50-50 formula, since they are regarded as capital expenditures.

New leases brought the government $389-million last year, on top of $316-million from concessions granted in 1956.

In 1944-45, the last previous concession grants brought in around $60-million.

In recent years, the cumulative ratio had remained steady at 55-45. It was shifted only 1%, to 56-44, by the new concession payments in 1956-57.

On an annual basis, the ratio was spread by bonus payments to 61-39 in 1956, and to 60-40 in 1957.

Total government oil revenue last year was $1.3-billion, including $389-million in bonuses. Net profits of companies operating in Venezuela amounted to $895-million.

In 1956, the government collected $1-billion, including $316-million in bonuses. Companies netted $684-million.

The ratios of government revenue to oil company profit, based on the Ministry's analysis, are shown in Table I.

It is notable that the profit ratio works out to 52-48 for 1956 and to 51-49 for 1957 if concessions payments are subtracted from total government oil revenues in those years.

These percentages are then exactly comparable to the Ministry's calculations for 1954 and 1955 respectively, before there were any new concessions.

Government revenues are always slightly higher than company profits, since royalties, customs duties, and other such fees are payable regardless of how much a company earns.

The flexible ingredient is the corporate income tax. That is, all of the regular taxes, including a standard corporate income tax, are calculated. If the government's total revenue from these sources is less than company profit, a special 50-50 corporate income surtax is applied (usually only to Creole and Shell, Venezuela's top producers). Smaller companies usually pay the government an amount greater than their profits—without application of the special surtax.

Revenues in 1957 hit a record high for the government, even excluding bonuses. Company earnings were also at a new record.

The Ministry's detailed breakdown on industry and government earnings is shown in Tables II and III.

Table I

Profit Ratio
(government-industry)

Year	Including Bonuses	Excluding Bonuses
1953	53-47	53-47
1954	52-48	52-48
1955	51-49	51-49
1956	61-39	52-48
1957	60-40	51-49

Table II

Government Revenues
(millions of Bolivares)

	1956	1957
Hydrocarbons taxes (including royalties and concessions payments)	2,265.6	2,741.0
Corporate income tax	848.0	1,154.2
Customs duties	72.0	101.1
Other taxes	58.9	109.2
Totals	3,244.5	4,105.5

Table III

Industry Position
(millions of Bolivares)

	1956	1957
Operating revenue	6,829	8,186
Taxes (excluding bonus payments)	2,128	2,776
Net industry profit	2,115	2,765
Net investment	7,213	8,507
Year's capital investment (including concessions payments)	2,206	3,013
% net profit on net investment	29.3%	32.5%
Dividends & transfers to parent companies	1,610	2,020
% dividends & transfers to net investment	22.3%	23.8%
Gross accumulated investment	13,038	15,342

...he's a few hours from anywhere

Once this boy would have lived a secluded life, far from the outside world. Today the world comes to his door. He learns many things, such as how power-driven machines can help him to meet the needs of his people.

Throughout Asia, Africa and the lands of the Pacific, new industries call for more oil. And Standard-Vacuum is doing its best to meet the demand. Stanvac finds the oil, transports and refines it, then delivers the finished products—all within the area where Stanvac operates.

This is a big job and a worth-while one. Stanvac is proud and privileged to be able to do it well.

STANDARD-VACUUM OIL COMPANY POWERS PROGRESS

White Plains, New York

Aramco Sets Sights Ahead

A $63-million capital expenditures program that will further boost its present 1.4-million b/d oil handling capacity was announced by Arabian American Oil Co. this week in its annual report.

Aramco made a series of major additions to its facilities in Saudi Arabia last year, which brought peak oil handling capacity to 1.4-million b/d. Its actual production averaged 992,000 b/d for the year, slightly ahead of the 986,000 b/d average in 1956, although it hit a new monthly record of 1.2-million b/d in July.

The further additions to its facilities will be built this year as integral parts of its long-range program to increase its capacity to deliver crude oil.

The company emphasized, however, that actual production "will continue to be controlled by the world-wide demand for oil, and the accessibility of world markets."

"Aramco looks to the future with confidence," said chairman F. A. Davies and president N. Hardy. "It has the advantage of access to the facilities and established markets of some of the most successful oil organizations in the world."

Aramco is owned jointly by four companies: 30% each by Standard Oil Co. (N. J.), Standard Oil Co. of California, and The Texas Co.; and 10% by Socony Mobil Oil Co.

The major part of this year's budget—$53-million—involves construction.

Key projects scheduled for completion this year, in full or in part, include the following:

- The biggest single item is a $29-million gas injection project in the Ain Dar area of the Ghawar field, which will handle 200-million cu. ft. daily. In addition, peak capacity of facilities at Abqaiq field will be expanded this year from 150.2-million cu. ft. daily to 210-million.

When the Ain Dar project goes into operation in early 1959, Aramco estimates it will be using 56% of the available gas produced with its crude.

- Producing capacity of the offshore Safaniya field will be expanded to 175,000 b/d this summer.
- An alkylation plant will be built at Ras Tanura to make it possible to produce 2,000 b/d of aviation gasoline. LPG facilities will be expanded to 1,500 b/d.
- Two tanker berths will be added to the present eight at the Ras Tanura terminal, by an 800-ft. extension to the north pier.
- Another pumping unit to be installed at Nariyah will help raise over-all capacity of the Trans-Arabian Pipe Line system to 460,000 b/d.
- Water injection facilities will be expanded at Abqaiq field to help maintain reservoir pressure.

Aramco officially estimates its net proved recoverable reserves at about 35-billion bbl. at the end of 1957.

During 1957, Aramco increased its producing oil wells from 164 to 189.

The Ghawar field produced over half of Aramco's 992,114 b/d last year. It averaged 586,349 b/d, as compared with 284,925 b/d from Abqaiq, 56,136 b/d from Safaniya, 39,709 b/d from Dammam, and 24,992 b/d from Qatif.

Refinery output last year included a higher proportion of fuel oil, to meet growing world demand.

Crude runs at Ras Tanura averaged 192,623 b/d, compared with 198,532 b/d in 1956. In the last half of the year, 26% of the refinery charge was Safaniya crude, which yields a high percentage of fuel oil.

What's New / AROUND THE WORLD

IRAN—District III oil rights, along the Gulf of Oman, are slated for a Canadian independent that offered National Iranian Oil Co. a 50-50 partnership without bonus.

The company is Sapphire Petroleums, Ltd., a Toronto-based company with U.S. and Canadian producing interests.

Under an agreement signed June 16 and sent to Iran's Parliament this week, Sapphire and NIOC will set up a nonprofit joint stock company in Iran for the new venture.

The contract covers a total of 10,000 sq. km. (3,860 sq. mi.) in two blocks lying north and south of latitude 26, between the southeast end of the Consortium's operating area and an onshore-offshore tract held by Sirip, the joint Italian-Iranian company.

Sapphire is committed to an $18-million exploration investment for a 12-year period, with $8-million of this to be spent during the first four years. Sapphire must drill its first well within two years or pay NIOC $350,000.

Annual rentals will be paid by Sapphire starting with the 13th year: $400 per sq. km. through the 17th year; then $480 through the 22nd; then $600 through the 25th.

Other terms are reported similar to those set forth in the recent agreement between Pan American Petroleum and NIOC (PW—May16'58, p56).

•

MEXICO—A group of U.S. banks is expected to put up $20-million to help finance the long-projected 606-mi. gas pipeline to Mexico City from the natural gas fields of Tabasco, in southeastern Mexico (PW—Sept. 13'57,p62).

Under a deal due to be concluded within the next month or so, three U.S. banks—Chase Manhattan, Chemical Corn Exchange, and Bank of America—would make the loan to Altos Hornos, Mexico's biggest steel company, to cover the cost of pipe.

This loan will cover half the $40-million cost of building the line, the biggest ever undertaken by Petroleos Mexicanos, the government oil monopoly.

As originally projected, the line would include an 18-in. section from the Jose Colomo gas field in Tabasco to the Minatitlan refinery. From there, 24-in. pipe would run to Mexico City via Puebla.

•

ARGENTINA—The Russians undercut world market prices in a part-barter deal to win a 1-million-ton one-year crude supply contract worth $15.9-million (PW—Jun.13'58,p6).

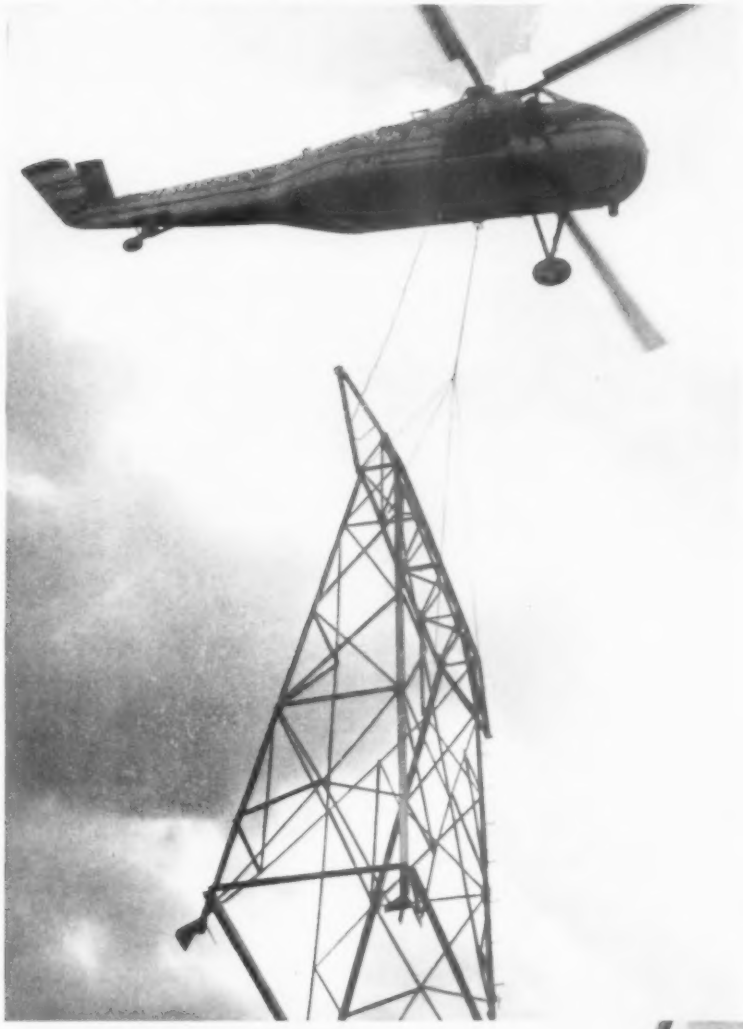
Conclusion of the deal, which will meet about one-fifth of Argentina's annual crude needs, was officially confirmed last week by Arturo Sabato, presidential delegate to YPF, the state oil entity.

The crude will be delivered up to July, 1959, at a price of $2.32 per bbl.

Of the total, 400,000 tons—valued at approximately $6.3-million—is to be delivered by the end of this year, and paid for out of a $7½-million trade balance due Argentina from the Russians.

The rest—600,000 tons—will be payable in Argentine exports, mainly wool, along lines similar to the recent barter deal between Uruguay and the Soviet Union.

SIKORSKYS ARE THE ONLY LARGE HELICOPTERS FULLY PROVED IN COMMERCIAL SERVICE



STEEL TOWER CONSTRUCTION

A 3,500-pound section of a steel high-voltage transmission tower is carried by S-58 to its inaccessible mountain site north of Los Angeles. In this project, the S-58 flew in crews to prepare 12 tower sites, poured concrete footings from hoppers hung beneath the aircraft, then flew the prefabricated tower sections into position. Many days of construction time were saved.

The only large helicopters thoroughly proved in commercial service are those made by Sikorsky Aircraft.

Only Sikorsky S-58s and S-55s have carried hundreds of thousands of passengers . . . and ton after ton of materials and cargo . . . in private-enterprise operations such as those of oil companies and scheduled airlines.

Sikorskys have also proved their versatility by handling a variety of jobs such as moving heavy steel towers, and lifting machinery, power line poles, and pre-mixed concrete to hard-to-reach places for public utility and construction companies.

Offshore, in the jungle or the Arctic, or wherever other transportation is inadequate, Sikorsky helicopters offer a unique capability to go wherever you need to go, carrying worthwhile payloads. And only Sikorskys have had successful heavy-payload commercial experience to back up their performance specifications. Write for complete information.

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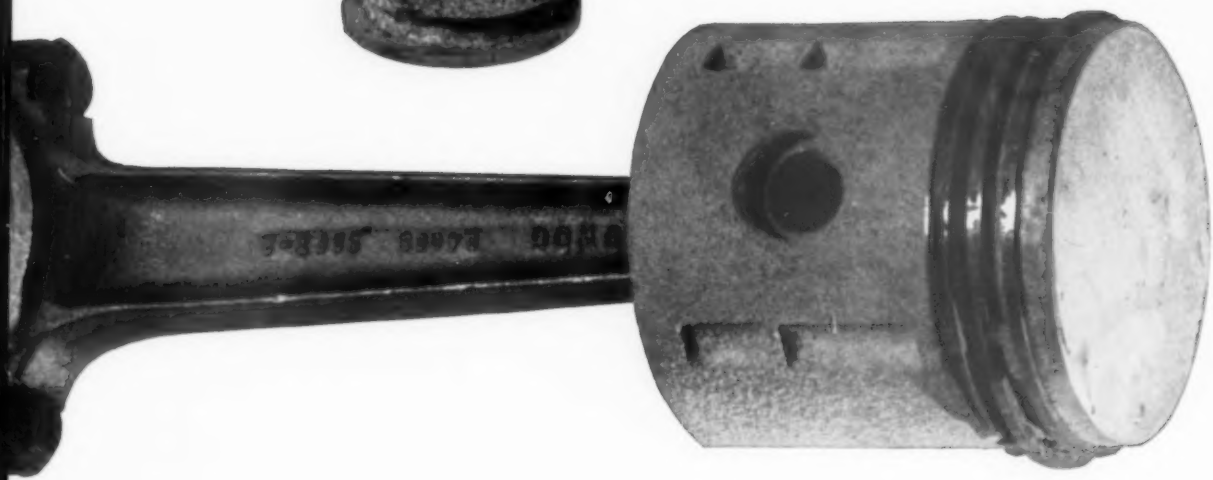
NEW GUINEA AIRLIFT

Three S-58s are speeding the search for oil in the jungles of New Guinea. Sectionalized oil drilling rigs and all incidental equipment such as the steel mats above were carried to their sites by helicopter, eliminating expensive road building.

Photo: *The British Petroleum Co. Ltd.*



CORROSION REALLY STOPPED!

Gears and pistons were used to illustrate the damage of corrosion more vividly. The basic idea of the ASTM Steam Turbine Oil Test in which probes are ordinarily used was not changed.

ARMOUR DUOMEENS®
OFFER COMPLETE PROTECTION
AGAINST CORROSION!

Here you see 2 pistons and gears after 20 hours in a modified ASTM Steam Turbine Oil Test. The piston and gear in the "control" oil-brine solution were badly corroded. *There was no corrosion on the lower piston and gear when only 60 ppm Duomeen salt was added to an identical solution. Both parts stayed as shiny and clean as when the test began!*

It is hypothesized that the Duomeen plated-out on the metal surface as a closely-packed mono-molecular film, enabling the surface to become preferentially oil-wettable. By such action, a highly effective diffusion barrier is formed, even at very low concentrations, which acts to inhibit corrosion.

Versatile Duomeens make all refinery products function better

Because these oil soluble organics are selectively adsorbed from oil to metal, they function as product additives, process corrosion inhibitors, and as chemical intermediates.

Diesel oils, lube oils, aviation gasolines, greases, automobile gasolines, #2 fuel oils—all can benefit from the Duomeens and other fatty amine derivatives in the following ways . . .

- Corrosion inhibitors in refinery products
- Sludge inhibitors in fuels and oils
- E.P. lubricants in hi-pressure oils and greases
- Oiliness agents in oils and greases
- De-icers in gasolines

These di-polar surface active agents are also being utilized in many other applications.

Refineries are using them as corrosion inhibitors throughout the entire refining process. Because of their adaptability, they have few equals when used as chemical intermediates. And new uses are still being discovered for the Duomeens.

Armour petroleum specialists will help you utilize the right organic for your finished products, your flow lines and equipment. There is a Duomeen—or a Duomeen derivative—specifically designed to solve almost any refinery problem.

Send for the new Duomeen booklet, product samples and application information.

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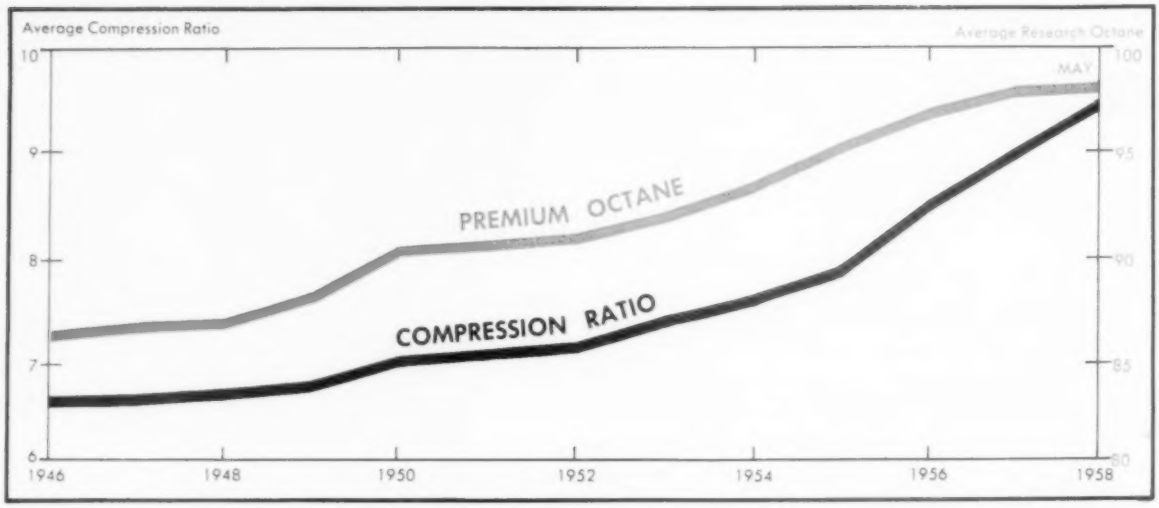


OCTANES AND COMPRESSION RATIOS have climbed steadily since 1946, but there's a deterrent to further increases. It's called . . .

Rumble—'the Octane-Proof Knock'

"Rumble," a low-pitched engine knock often occurring in high-compression automobile engines, may put at least a temporary ceiling on future gasoline compositions and engine compression ratios.

Severe rumble is truly a startling noise. It sounds like a boy dragging a broomstick along a picket fence. Its sound is indistinguishable from complete main-bearing failure—although, mechanically, it probably will not damage an engine.

Rumble has been heard in both commercial and experimental automotive engines with compression ratios above 9.5:1. It was noticed, but not recognized, in the early use of the 12:1 compression-ratio V-8 research engine furnished to oil companies by General Motors some 12 years ago.

Octanes alone, though they are a panacea for engine "ping," are no cure for rumble.

Research investigations have shown that the mere raising of motor gasoline octanes will not prevent rumble. And in developments to date, there is no indication that improvements in combustion-chamber design will substantially affect rumble for compression ratios above 11:1.

Prime cause of rumble appears to be uncontrolled combustion of fuel on the surfaces of combustion-chamber deposits.

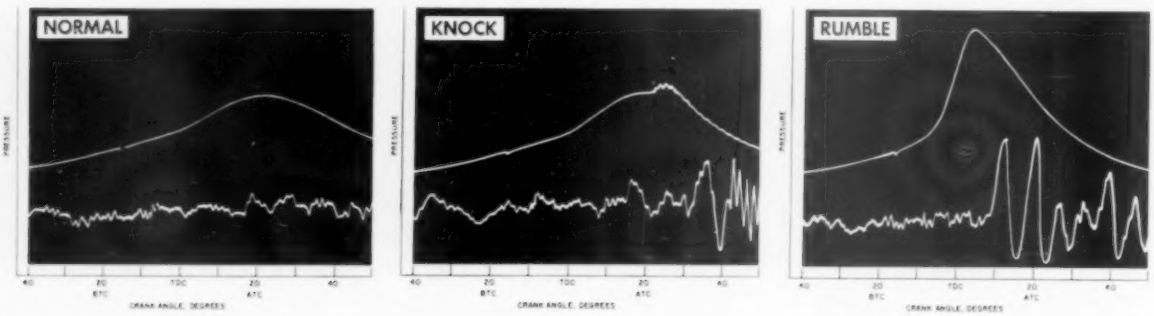
Most researchers believe that rumble is caused by ignition of the fuel-air mixture simultaneously from many deposit "hot spots" within the chamber. This causes an excessive pressure to develop in the chamber and brings on rumble.

Engine operating conditions also breed rumble. Commuter-type driving is the worst, because it builds up excessive deposits in the engine.

Rumble occurs oftener in engines operating on light-duty driving schedules than in those on heavier duty operation, according to A. E. Felt, J. A. Warren, and C. A. Hall, of Ethyl Corp., who spoke at the recent Atlantic City (N. J.) meeting of the Society of Automotive Engineers.

Rumble is most likely to occur at wide-open throttle, generally at engine speeds above 2,000 rpm., and in engines heavily laden with combustion-chamber deposits.

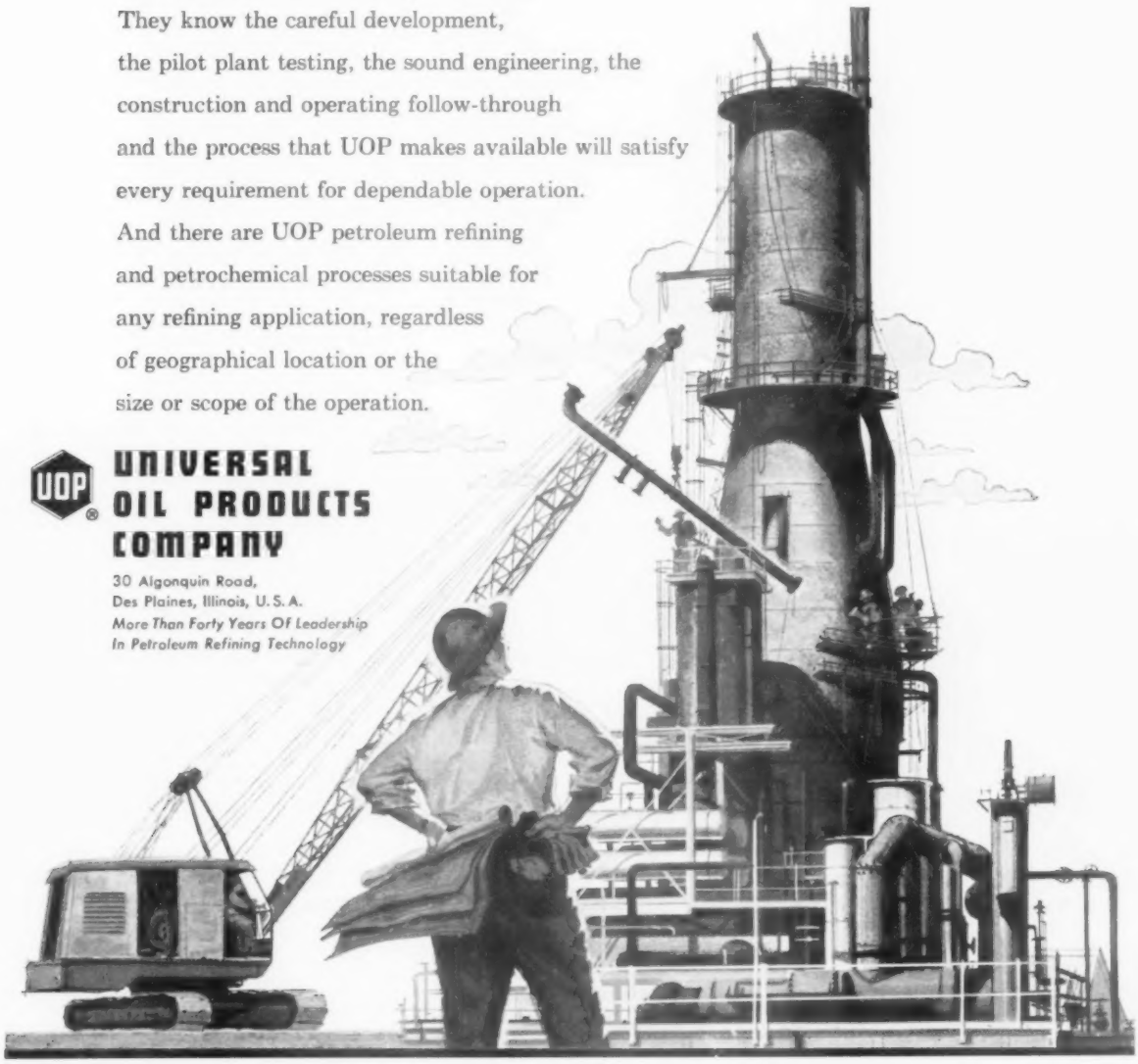
Aromatic fuels appear to be the



NORMAL COMBUSTION, KNOCK, AND RUMBLE in a 12:1 compression-ratio engine are shown above. Engine noise recorded on an oscillograph is shown by the lower, wavy lines; rise in pressure during combustion in the cylinder is shown by the smoother upper lines. At the left is typical normal combustion. At the center is typical engine knock (or ping), shown by a jaggedness on the final part of the pressure curve, and increased engine noise. At the right is typical rumble, shown by a very rapidly rising pressure curve during combustion, and a wildly fluctuating noise curve.

When your business depends on a refining process . . . you can depend on UOP

Proper functioning of new processing equipment is important to every established refiner—large or small. But to the "grass roots" refiner—who has built a new refinery from the ground up—it is a matter of survival. This is the reason so many "grass roots" refineries are based on UOP processes—for refiners the world over have learned to rely on Universal to come through when the chips are down. They know the careful development, the pilot plant testing, the sound engineering, the construction and operating follow-through and the process that UOP makes available will satisfy every requirement for dependable operation. And there are UOP petroleum refining and petrochemical processes suitable for any refining application, regardless of geographical location or the size or scope of the operation.



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most rumble-prone, according to studies by Ethyl Corp. and General Motors.

Both the Ethyl spokesmen and W. M. Wiese, of General Motors, told SAE of test programs pointing the finger of blame at aromatics in gasolines as a major contributor to rumble.

Aromatic hydrocarbons, according to both companies, tend to form the type of deposits that increase surface ignition—and hence the tendency for the engine to rumble.

On the other hand, paraffinic gasolines containing mostly alkylates are relatively rumble-free.

One Ethyl test compared a paraffinic gasoline containing 89% of full-boiling alkylate with a highly aromatic fuel. These tests showed no rumble for the paraffinic gasoline. The aromatic gasoline rumbled up to 100% of the time when on wide-open acceleration.

Even the old standby, catalytic cracking, seems to contribute to rumble.

Highly olefinic cat naphthas increase the tendency of an engine to rumble—not so much by the formation of deposits, but rather because such fuels are easily ignited by combustion-chamber deposits already present, according to Ethyl.

Phosphorous fuel additives help reduce rumble, according to Ethyl and General Motors tests.

Ethyl reports one test series, with nine engines of 11:1 compression ratio, where use of phosphorous additive reduced the incidence of rumble from 46% to only 18% of the test observations.

General Motors tests also show that phosphorous-containing fuel additives help reduce rumble. However, both Ethyl and General Motors say that phosphorous alone is not the complete solution to rumble.

A NEW ALKYLATION UNIT for Shell Oil Co. at Anacortes, Wash., will supply the . . .

First Alky for the Northwest

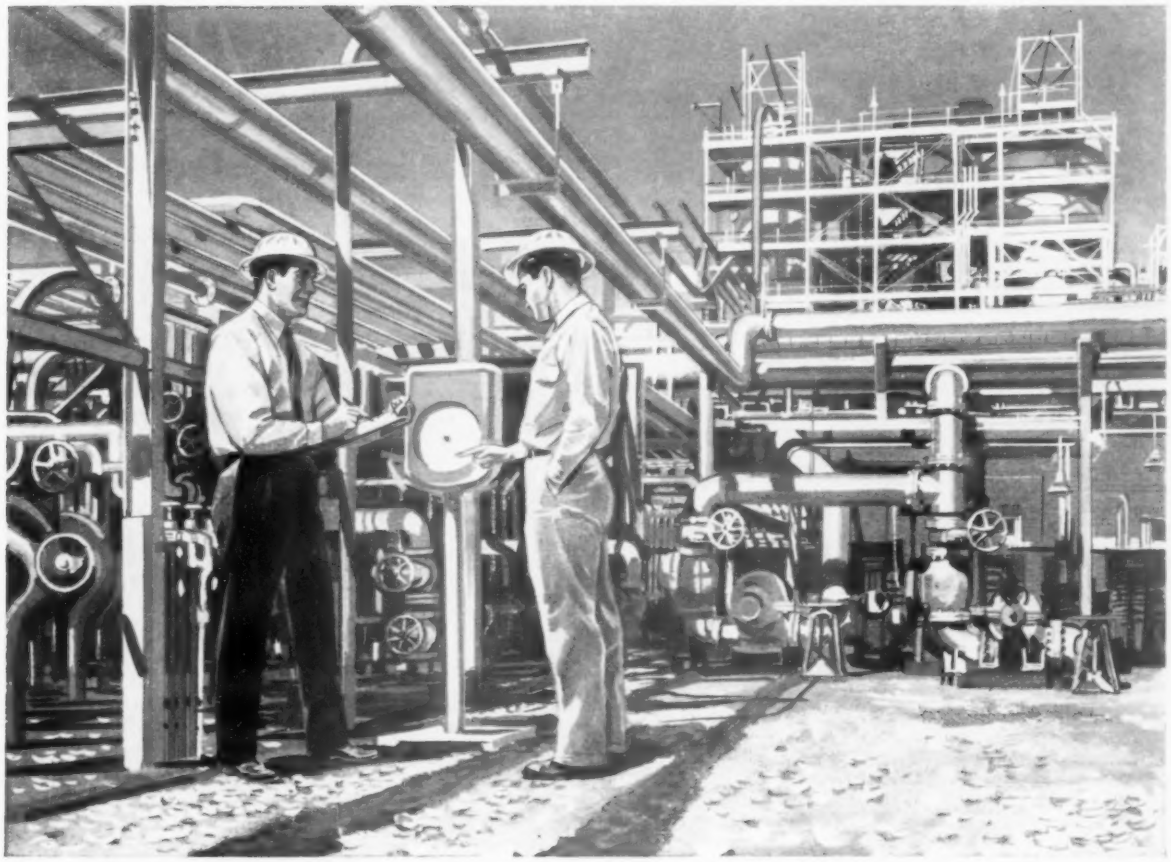
A new alkylation unit just put on stream at Shell Oil Co.'s Anacortes (Wash.) refinery is the first unit of its kind in the Pacific Northwest. The unit was built to supply expanding markets in the Pacific Northwest for both commercial and military uses.

It was designed to produce 2,900 b/d of alkylate blending stock for the manufacture of 115-grade avgas. But it can also be used to produce motor-grade alkylate.

Cost of the unit is reported by Shell to be more than $5-million. Fluor Corp., Ltd., did the construction work on the project.

Sulfuric acid catalyst and Stratco "effluent refrigeration" are used in the process.

Isobutane and butylene are put into intimate contact with the sulfuric acid in two Stratco horizontal effluent refrigeration contactors and combine to make the alkylate. The contactors



For only a few cents a day, **COREXIT** will give you up to **98% protection** against internal corrosion

Humble's COREXIT corrosion inhibitors effectively and economically prevent internal corrosion in refineries. Injected into the product stream, COREXIT establishes a protective film on metal surfaces, assuring up to 98% protection against the causes of internal corrosion. Thus it lengthens the life of expensive equipment and prolongs refinery runs between costly turn-arounds.

COREXIT also prevents fouling and promotes increased thermal efficiencies. You can save time and money by including COREXIT in your program for corrosion prevention in the refinery.

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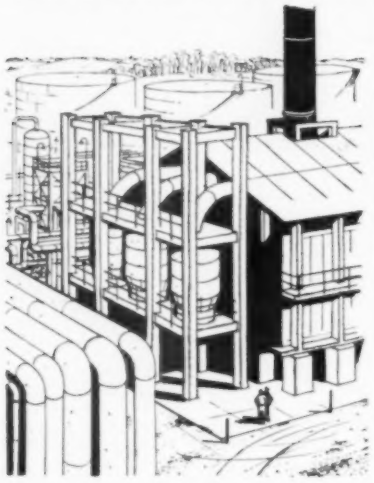
HOUDRIFORMING



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The HOUDRIFORMER at GERE—nominal design capacity, 3500 BPSD—has been on stream for over one year with notable success. Through HOUDRIFORMING, GERE obtains higher yields, higher octanes and lower costs per unit of production.

Petroleum refiners everywhere have put efficient, economical Houdry Processes and Catalysts to work for them. You can, too. Our technical service engineers will be pleased to show you how. Write today for further information.

*

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**Houdry means Progress . . . through Catalysis*

were supplied by the Stratford Engineering Corp.

Effluent alkylate and unreacted materials are refrigerated to conserve reactants. The reaction is carried out at a temperature of about 45F.

Sulfuric acid for the process is furnished by a new plant built adjacent to the Shell refinery by the General Chemical Division of Allied Chemical Corp.

The 30 tons a day of sulfuric acid needed by Shell's alkylation unit are made by Allied from hydrogen sulfide which is piped from the Shell refinery.

Shell's two-stage catalytic cracker will furnish the butylene and part of the isobutane needed by the alkylation unit.

This cat cracker, designed by Shell Development Co., gives an unusually high production of mixed butane, isobutanes, and butylenes, as compared with the more conventional single-stage cat crackers, according to Shell.

However, isobutane production is relatively low compared to that of butylenes. The additional isobutane needed will be obtained from outside sources.

Fractionation towers associated with the alkylation unit use chromatography to assist in getting optimum operation.

Two consolidated Electrodynamics Corp. chromatographs are used, one on the deisobutanized column, the other on the debutanizer column.

What's New / IN PROCESSING

A new natural gasoline plant, jointly owned by Provo Gas Producers, Ltd., and Dom Exploration (Western), Ltd., will be built in Saskatchewan.

Initial design capacity of the plant will be 25-million cu. ft. a day. There is provision for expansion to 45-million cu. ft. a day.

The plant will be located in the Steelman oil field, southeastern Saskatchewan. Refinery Engineering, Ltd., of Toronto, will build it. Total cost, including associated pipeline and gathering facilities, will be about $16-million.

•

Houdry Process Corp. is suing Commonwealth Oil Refining Co. for unpaid process license royalties and catalyst purchases.

Houdry's suit is in answer to a Commonwealth suit against Houdry, which claimed unsatisfactory performance of certain cracking catalysts. Commonwealth asked $2-million in damages.

Houdry's suits ask for $120,124.95 unpaid accrued royalties on Houdriflow and Houdriforming units, and $124,270.38 for unpaid balances on catalyst purchases at Commonwealth's Puerto Rico refinery.

•

A new desulfurizer-Platformer unit is on stream at Shell Oil Co.'s Wilmington-Dominguez (Calif.) refinery.

Capacity of the unit is 16,000 b/d. Construction was by Kaiser Engineers, a division of Henry J. Kaiser Co.

Cities Service Oil Co. has a newly installed electronic data-processing system at its Ponca City (Okla.) refinery.

The system monitors 100 key temperatures, pressures, and flowrates on Cities Service's 6,000 b/d cat reformer. Beckman Instruments, Inc., furnished and installed the system.

•

Fluor Corp., Ltd., has the contract for a new cat cracker at the Richmond (Calif.) refinery of Standard Oil Co. of California, Western Operations, Inc. (PW—June.13'58,p64).

The unit will be an Esso Model IV fluid catalytic cracker. Capacity, previously reported as 40,000 b/d, will be 55,000 b/d total feed (fresh plus recycle).

•

West Branch Refineries, Inc., a subsidiary of Osceola Refining Co., Inc., has placed a new Houdriformer on stream. Capacity of the unit is 1,150 b/d. Process engineering and licensing was by Houdry Process Corp.

•

Standard Oil Co. (Ind.) is using a new program to improve efficiency and economy of operations at its refineries.

Five senior scientists of Standard's Whiting (Ind.) Research Laboratories have been appointed to coordinate the application of research to different aspects of refining at all locations.

Foxboro makes a better instrument .... or Foxboro doesn't make it!

Factory alignment of the M/40 Controller — the instrument that introduced the first reliable, close-tolerance control for industrial processing.

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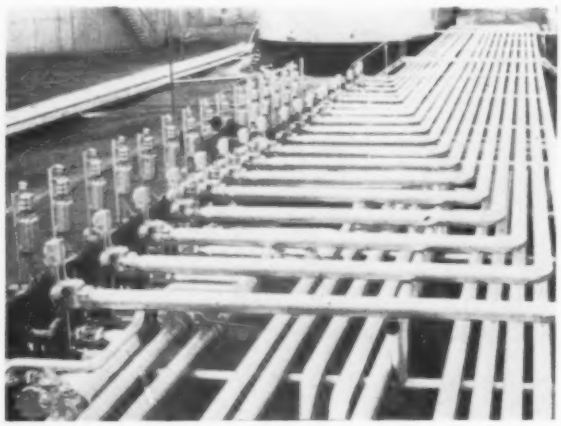
FASTER LOADING of truck transports was achieved with a new drive-through loading rack and remote, meter-controlled pumping.

FASTER COMMUNICATION is possible with pneumatic tubes to carry tickets to and from the loading rack and meter house.



BIGGER PIPES, running symmetrically from storage tanks to pumps, symbolize this terminal's planned efficiency.

How One Terminal Cut Operating Costs

What is the key to low operating costs at a products terminal? Esso Standard's Friendship (N.C.) terminal pegs its cost-cutting success on constant modernization and constant effort to increase across-the-board efficiency.

Friendship terminal is just outside Greensboro, N.C., at the end of the Plantation Pipeline, which carries products from Esso's Baton Rouge (La.) refinery. The terminal has a storage capacity of 31.3-million gal. and a monthly average throughput of 20-million gal.

The Friendship terminal has the lowest operating cost per gallon of any Esso pipeline products terminal.

"It's not that there's anything so new or special at this terminal," says a company official. "It's just that all the routine steps are speeded up."

The prime requisite is replacing obsolete equipment. A new loading rack at this terminal, for instance, cut loading time for a 5,000-gal. truck from 35 minutes to 14 minutes.

Parallel parking at the old loading rack greatly limited the truck capacity and bogged down the whole operation. Now drive-through positioning allows handling of more trucks and eliminates costly delays.

The whole delivery system has been rebuilt in the past year—providing, in addition to the new loading racks, larger pipes, faster pumps, and a new "meter house."

The new pumps speeded up the loading rate to 500 gal. per minute.

A trend toward larger-capacity trucks has also increased efficiency.

Product losses due to evaporation have been minimized with the installation of a fill-pipe extension that reaches to the bottom of the truck tank being loaded. The old fill pipes came only inside the top of the tank; thus, the fuel splashed to the bottom, and a significant amount was lost by evaporation and mechanical spray.

Good communications and remote-control procedures also whittle costs.

When a driver arrives at the terminal he is told, over an intercom system, which loading rack to pull up to. He then sends the ticket from his previous delivery to the meter house via pneumatic tube. The ticket for his next delivery is sent back by tube.

There are no employees at the loading rack except the driver. All flow of products is controlled from the meter house. Most of the meters have automatic shut-off devices.

Keeping equipment and personnel "busy all the time" is another essential. The average operating day has been boosted from 10 to 12 hours to 16 to 20 hours. This cut down equipment needs, and kept it busy longer, thus reducing capital cost per gallon.

"Absentee" night deliveries to stations are a big cost-saving factor. This demands dealer cooperation.

By making night deliveries—even

How Do You Plan a Terminal for the Most Efficient Operation?

Do you plan to market gasoline through many high-gallonage outlets? Or do you plan to sell a range of products, such as fuel oil, kerosene and gasoline, through more diversified outlets?

The picture shows two adjacent terminals on the same pipeline designed to operate efficiently under these two different marketing conditions.

The terminal in the background stores gasoline where pumping in and pumping out are almost daily procedures. For such operation, the owner wisely selected three Graver Double-Deck Floating Roof Tanks to combat vapor losses during frequent fillings and emptyings.

In the terminal in the foreground, storage was planned for marketing a variety of products. The Graver Expansion Roof® Tank at the left and the large cone roof tank manifolded to it preserve the volatility of stored gasoline during less frequent turnovers. The two smaller cone roof tanks hold kerosene and fuel oil.

These two adjacent terminals meet two quite different marketing requirements, yet both embody Graver's tested and proved designs for vapor-saving, profit-saving tankage. If you are planning new or enlarged terminal facilities, it pays to plan with Graver.

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when the station is closed—equipment is used more hours per day. There's also less traffic and interference. This is especially important in using large-capacity trucks, which are impractical in heavy traffic.

When the station is closed there's no problem of customer cars and delivery trucks getting in each other's way.

Efficient TBA distribution requires close inventory control. A close watch is kept on demand and inventory control, so that orders can be filled fast without overstocking—and without running the risk of piling up obsolete items.

It's hard to pin down actual figures for modernization cost or dollar savings—for this "efficiency drive" has no beginning and no end, says Esso.

This terminal's cost-cutting operations are part of a company-wide program to make all distribution operations more efficient. Some terminals cannot utilize every technique that this one has used. For example, some cities limit the size of delivery trucks.

"Already some of the equipment put in three or four years ago is becoming obsolete," comments one official, "and we'll have to replace that soon."

What's New / IN MARKETING

The Texas Co. is building three new products terminals in Pennsylvania, and converting a Massachusetts barge terminal to a tanker terminal with nine times the previous capacity.

The new sales terminals are:

- Harrisburg, Pa., serving the vicinity, and south to the Maryland state line. Storage capacity: 6.3-million gal. To be completed in January, 1959.
- Altoona, Pa., serving the vicinity. Storage capacity: 3.1-million gal. To be completed in January, 1959.
- Williamsport, Pa., serving the vicinity, and north-central Pennsylvania. Storage capacity: 4.2-million gal. To be completed in January, 1959.
- Chelsea, Mass., tanker terminal, serving as main distribution center for the Boston area. Storage capacity: 13.7-million gal. To be completed in July, 1959.

The three Pennsylvania terminals will receive products through the new Laurel Pipe Line, now under construction between Philadelphia and Cleveland. The line is partly owned by Texaco.

•

Standard Oil Co. (Ind.) reports that its use of electronic computers to process sales data has cut in half the time it takes to get statistics to executives for analysis.

The company has been using eight IBM 650 computers since January, 1957, at its regional offices.

The regional machines are used for price checking, daily balancing, monthly reports, salaried and commission payrolls, pricing, billing, and stock control of TBA.

•

The number of buses using LP-gas is growing. Last year, some 380-million passengers rode in city buses powered by LP-gas engines, according to the annual survey by the Liquefied Petroleum Gas Assn. LPGA also reports that 236 buses will be added to the 2,444 vehicles already using butane or propane.

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1957 OIL PRICES NOW AVAILABLE!

The 34th annual edition of Platt's OIL PRICE HANDBOOK is now available. This is a must for the price-conscious oil man.

Each issue contains the following information:

Refinery and Terminal Prices—For the year 1957, all price changes and monthly average lows, average highs, and average lows and highs for all petroleum products at all locations reported daily in the OILGRAM Price Service.

Tanker Rates—Average for the year and previous years of tanker rates as reported in Price Service.

Tank Wagon Prices—This section summarizes the tank wagon prices reported in the weekly supplements to Price Service.

Crude Oil Prices—This section summarizes crude oil prices reported in the monthly supplements to Price Service.

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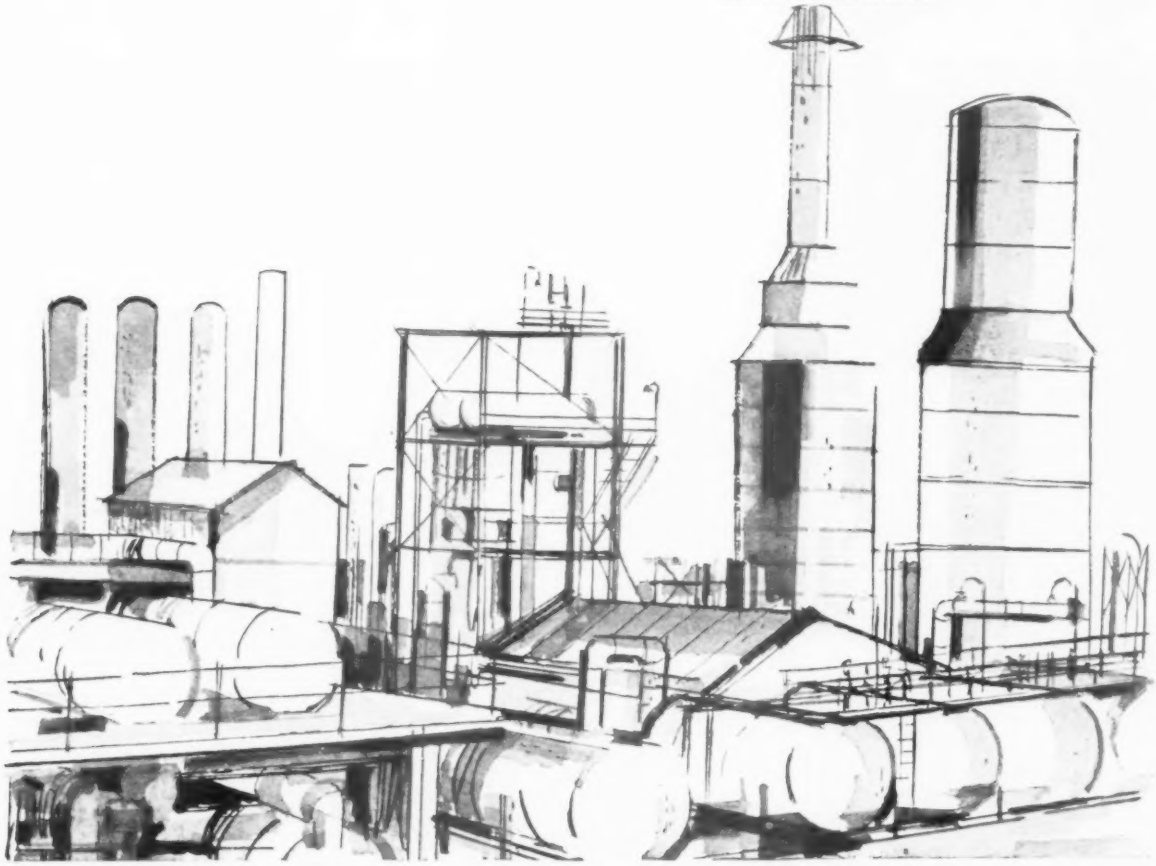

R. H. Evans

E. Block

C. Copps

J. E. Williams

OLIN MATHIESON CHEMICAL CORP., New York, has completed the integration of 11 of its former 14 divisions into four new divisions. The four divisions and the vice-presidents appointed to head them are: chemicals, **Edward Block**; metals, **Jesse E. Williams**; packaging, **Robert H. Evans**; and energy, **Carroll Copps**. Copps joins Olin Mathieson from Atlas Powder Co., where he has been executive vice-president since 1956. Block was Olin Mathieson's vice-president in charge of the agricultural and phosphate chemicals divisions, and Evans has been vice-president of the company's forest products division. Williams was formerly vice-president and general manager of the western brass division. At the same time, **Walter F. O'Connell** was named corporate vice-president for finance, and **Russell Hopkinson** corporate vice-president for commercial development.

DR. PHILIP LEFRANCOIS was named a research associate by M. W. Kellogg Co., New York, subsidiary of Pullman, Inc. Lefrancois, with Kellogg since 1944, was formerly a research chemist.

D. MICHAEL CURRAN is now senior vice-president of Williams Bros., engineers and constructors, in Tulsa. Curran will be responsible for administrative and field supervision of Williams' pipeline projects (in the U.S., Canada, Costa Rica, Bolivia, Chile, Paraguay, Venezuela, Austria, Turkey, and Iran). Curran has been president of M. J. Crose Mfg. Co., also in Tulsa.

RICHARD E. JENKINS is assistant general sales manager at Olean, N.Y., for Clark Bros. Co., one of the Dresser Industries, manufacturer of compressors and gas turbines. Jenkins will supervise all district and branch offices west of the Mississippi River, including Los Angeles, Tulsa, and Houston. Since 1956, he has been administrative sales manager at Olean. (Prior to that, he worked with oil, gas, pipeline, and distributing companies in the application of Clark's products.)

VICTOR V. GRAF has joined Seismograph Service Corp., Tulsa, as assistant to the president. Graf was formerly manager of research, engineering, and supply for Seismograph Service Ltd., British subsidiary of SSC.

CARL I. COLLINS, formerly vice-president in charge of the Superior Steel division of Copperweld Steel Co., in Carnegie, Pa., is vice-president and assistant to **James M. Darbaker**, president, in Pittsburgh. **Joseph W. Kennedy, Jr.**, a vice-president, replaces Collins at Superior. **Reid M. Pittenger**, formerly industrial relations manager, was promoted to vice-president of the Ohio seamless tube division, succeeding Kennedy.

COLIN E. SPEARING has been elected a director of Kellogg International Corp., subsidiary of Pullman, Inc., in London. Spearing was formerly general manager of the refineries department of British Petroleum Co., and a director of BP Trading Co.

C. E. Spearing

D. M. Koons

DICK M. KOONS has been named director of the research and development department of Otis Engineering Corp., in Dallas. Before joining Otis earlier this year as a development engineer, Koons was a senior production engineer with Cia. Shell de Venezuela, in Maracaibo.

SAMUEL S. SMITH is manager of the newly activated Rocky Mountain sales region for the pumping unit division of Parkersburg Rig & Reel Co. Smith, previously in charge of pumping unit sales in the Canadian division, will be located in Denver. **Ray Armstrong** will transfer from Fort Worth to replace Smith in Canada.

HUDSON ENGINEERING CO., Birmingham, Ala., and **NORTHMONSEN CO.**, Salt Lake City, have been named manufacturers' representatives for Black, Sivalls & Bryson, Inc., Kansas City, Mo. Both companies will handle BS&B controls, safety heads, and tank heads.

JOHN T. KUKOWSKI has become acting supervisor of the research laboratory, and **JOHN VAN LIER** acting supervisor of the design section of the research and development department, for Purolator Products, Inc., Rahway, N.J. Kukowski has been research engineer in the department since 1955. (Prior to that, he was production manager for Sun Chemical Corp.) Van Lier has been chief engineer for the company's bulk filtration and tank fabrication facilities since 1954.

R. H. BRADLEY has been appointed district manager of J. F. Pritchard & Co., in Houston. He replaces **W. H. MacKay**, who is retiring.

E. F. Harrington

J. D. Tolliver

JACK D. TOLLIVER has been promoted to the newly established position of sales manager for the eastern region, and **EDWARD F. HARRINGTON** succeeds him as manager of the sales development department, of Tube Turns, Louisville, Ky., division of Chemetron Corp. Tolliver, sales development manager since 1955, will manage eastern operations from Louisville. Harrington, with Tube Turns since 1954, was most recently in the sales development department.

ROBERT D. BUTLER has been named assistant to the sales manager of plug valves for W-K-M division of ACF Industries, Inc., in Houston. He joined the company in 1953 as sales representative of plug valves in the Southeast.

R. D. Butler

C. C. Randall

C. C. RANDALL is the new sales representative in the Houston area for Atlas Pipe, Inc. Randall was formerly associated with Barge Service Corp. and National Tube Co., both in Houston.

JACK K. SUTTER is manager of tubular sales for National Supply Co., Pittsburgh. He became Pittsburgh district manager in 1950, and sales manager of standard pipe products in 1956.

Three little future accountants seem to be amazed at the figures their father is showing them in the family budget. Their father and mother, Mr. and Mrs. Richard Baer, through long experience, appear able to take the budget more in stride. Mr. Baer is an accountant in the General Office of Standard Oil Company where Standard's annual budget is prepared.

Where does the money go?

REVIEWING FAMILY BUDGETS, pleasant or not, is a task every family has to face at some time. And every business, too. In a way, company finances are a lot like personal financial problems. Companies, too, must watch the pennies. Like you, Standard Oil and its subsidiary companies took in a certain amount of money last year. And here's what happened to it.

You are welcome to a copy of our 32-page 1957 Annual Report.
Just write to Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.

1. Things we bought and used...59.5%

Most of the money we took in went for things we had to buy, such as crude oil, materials and services, plus charges made for wear and tear. These costs are roughly comparable to your living expenses. We buy everything from paper clips to structural steel from more than 32,000 independent companies in hundreds of American communities. While our costs have skyrocketed in the past few years, prices of oil products have gone up only slightly in the same period!

2. Taxes paid...18.7%

Our next biggest item—even bigger than our payroll—was for taxes, including our own taxes, and those we collect from our customers for national, state and local governments. All together this totaled $447,048,487. And that figure does not include the many "hidden" taxes everyone pays!

3. Wages, salaries, benefits...15.5%

Then there were wages, salaries and benefits for our 49,680 employees. Standard Oil employees enjoy one of the most progressive benefit programs in any industry. Back in 1903, when retirement plans were virtually unheard of in industry, Standard Oil started its retirement plan. It was among the first industrial companies in America to do this.

4. Profits used for improvement...4.0%

After all costs of doing business were taken care of, 6.3¢ was left. This is profit. We used part of this, or 4.0¢ of our total income, to expand facilities and to improve our products and services for the millions of people who depend on us for petroleum products.

5. Profits paid to owners...2.3%

The balance, or 2.3¢, went as dividends to our 148,400 shareholder-owners. Standard Oil has paid dividends for 64 consecutive years. The value of dividends paid in 1957, including a special fourth quarter dividend, was $2.11 per share. We try to pay share owners a dividend equal in value to approximately half of earnings each year, reinvesting the remainder for future growth in the interest of shareholders, employees and the public.

6. And that's where our money went!

All the money we took in has been accounted for. At our service stations, our plans and investments face the final test, for our millions of customers are the bosses. Through our subsidiaries, we serve all America. Our products are sold in 48 states.

What makes a company a good citizen? To be a good citizen a business must be frank and open—with employees, stockholders, customers, the public. In advertisements like this during the year, we at Standard Oil publish reports to our neighbors so you will know how we work, something about our Standard Oil family, where our money goes, and the part we play in the prosperity of the communities in which we live and work.

STANDARD OIL COMPANY
(INDIANA)
MARKETING SUBSIDIARIES: AMOCO (The American Oil Company) • UTOCO (Utah Oil Refining Company)

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Here's the most advanced meter body available today for flow and liquid level metering. You can use it with virtually any process fluid, with combustible fluids, and in hazardous atmospheres. Meter body has connections for either vertical or horizontal piping. Remove it from the system for servicing without disturbing the piping.

Models available in many ranges, for both flow and liquid level measurement and control. Call your nearby Honeywell field engineer for details on the new Honeywell Bellows Meter. He's as near as your phone. Or write for Catalog C22-1.

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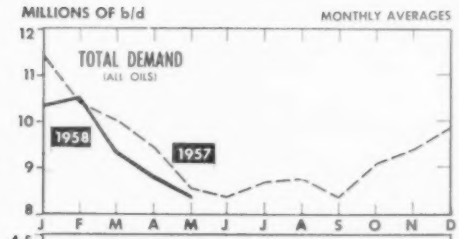
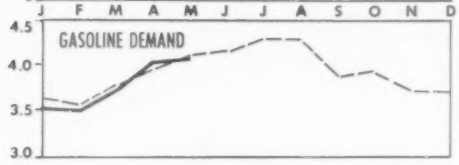
PETROLEUM WEEK'S

Fingertip Figures



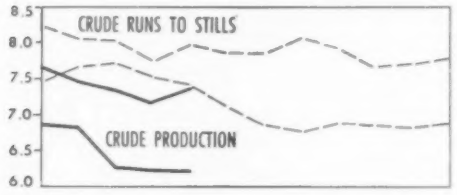
TOTAL DEMAND

Latest 4-week average	8.369
Year ago	8.638



GASOLINE DEMAND

Latest 4-week average	4.213
Year ago	4.220

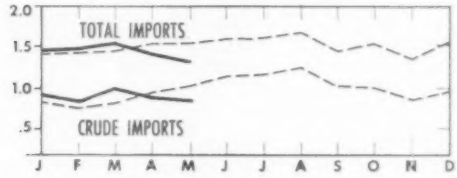


RUNS TO STILLS

Latest week	7.522
Previous week	7.659
Year ago	7.859

CRUDE PRODUCTION

Latest week	6.345
Previous week	6.335
Year ago	7.238

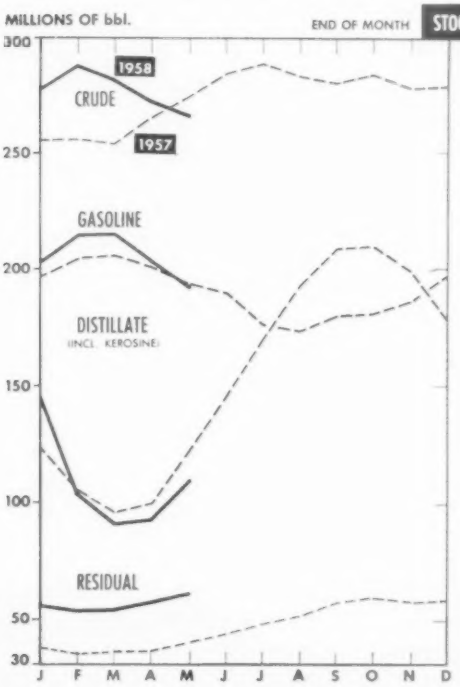


TOTAL IMPORTS

Latest week	1,655
Previous week	1,504
Year ago	1,353

CRUDE IMPORTS

Latest week	.976
Previous week	.926
Year ago	.964



STOCKS: CRUDE

Week ended 6-14	260.5
Previous week	263.1
Year ago	274.2

GASOLINE

Latest week	188.0
Previous week	190.2
Year ago	189.2

DISTILLATES

Latest week	123.6
Previous week	119.7
Year ago	138.3

RESIDUAL

Latest week	63.6
Previous week	63.4
Year ago	43.9

Total demand for gasoline during the first three weeks of June is running just slightly above a year ago. Inventories have declined by 5.3-million bbl., or more than in all of last June.

At the rate of decline achieved so far in June—265,000 b/d—motor fuel stocks by the end of the month should be about 6-million bbl. under a year earlier.

In fact, the decline in stocks may prove to be even greater than expected. For refinery runs, which averaged 7,677,000 b/d in the first two weeks of the month, dropped to 7,522,000 b/d last week.

Runs in the final week of June may drop even lower. Based on the latest Bureau of Mines crude stock report, crude in storage east of the Rockies is now below what most companies term the absolute minimum working level (page 11).

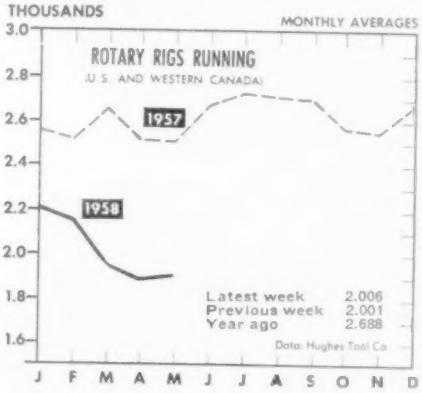
Domestic demand for gasoline this month is not living up to earlier hopes, however. Last June's demand was relatively low, but so far this year, domestic demand is only up 1.7%.

Some economists blame the weather for the lower consumption. Others say consumers just aren't buying as much gasoline, period. Present predictions are that domestic demand next month may be just about equal to last July, when domestic gasoline demand was 3.7% above the preceding month.

The peak summer demand for gasoline could occur in June, July, or August.

But even if gasoline demand this summer only matches the level of 1957, inventories will decline at a large enough rate to keep stocks in proper balance for the remainder of the year—barring an unusual upturn in refinery operating rates.

If this condition proves true, it would mark the first year in recent times that the industry approached fall without an oversupply of gasoline.



The Market Trend

Will the Markets Strengthen with Crude?

The markets look as if they are trying to get ready to turn stronger. Crude prices look as if they will hold. Product demand looks as if it would buck up a bit.

And the refinery position does look better. Gasoline looks much stronger at wholesale in the Upper Midwest. There has been substantial buying of gasoline along the Mississippi River. No. 2 fuel looks firm at the Gulf.

Now, the question is: Can this crude-impelled price steadiness carry through refining into marketing? Looking back, crude prices in the Southwest turned from weak to steady because of reduced production rates. This, in turn, cut down cargo offerings at the Gulf and, incidentally, caused an abatement in discounts.

Retail conditions on gasoline are still very spotty over much of the nation, particularly in good-sized cities. Last week, gasoline prices dropped 1¢ throughout the state of New Jersey. Jacksonville and Tampa have a 7¢ price war in full bloom. Indianapolis and Ft. Wayne prices are down anywhere from 4.7¢ to 5.7¢ a gal. Prices at Mobile are off 4.9¢. Norfolk and Savannah are gripped by price cutting ranging from 4.7¢ to 5¢.

Fuel oil marketing, too, is fraught with all kinds of give-aways. The East Coast "cargo allowance" (off barge prices) has expanded from 15¢ to 36¢ a bbl. since last December. The latest gimmick, this week, is an "advertising allowance" of 0.3¢ on No. 2 fuel, which one supplier is giving to barge accounts in lieu of an open price cut.

And buyers are very tough to scare as long as there is plenty of spare refining capacity, shut-in crude production, and a fleet of idle tankers and barges. Above-ground inventories may have been reduced substantially this year. But they can still be increased just by the turn of a valve.

It may be that only a supply crisis will bring the buyers back, cap in hand. It doesn't worry a New York barge reseller in the least that Texas crude prices are getting firmer. All he knows—and all he has to know for now—is that half a dozen majors would love to get him to change brands.

Who's In The Middle?

The happiest people about prices these days are at the opposite poles of distribution: the Southwest producer and the East Coast peddler.

Southwest crude prices have shored up markedly; in fact, one larger buyer thinks he may not be able to get enough purchased crude this summer, and may have to fill the gap by "imports" from California. At the other end of the scale, New York rack buyers are being offered some of the lowest prices in years.

An Order For No. 6:

A steel mill entered the Mid-Continent market this week looking for No. 6 fuel. Normally, this would be cheering news in Oklahoma. But the mill has put the word out that it wants to pay no higher than what it would pay in Chicago—which nets back to Group 3 at about $1.05 a bbl.

Two Cuts In the East:

The East Coast saw two fairly broad price cuts early this week. Esso Standard reduced No. 4 and 5 fuel oil 15¢ a bbl. from Norfolk north. And Sun cut gasoline 0.5¢ to 1.5¢ in New England.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All Prices as of June 23

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem. 12.125-12.5
- Gasoline, 92 oct reg. 10.25-12.375
- Kerosine 8.625-8.875
- Heating oil, No. 2 ..... 8.125-10.25
- Gas oil, 48-52 d.i. 8.375-10.5
- Fuel oil, bunker "C" $2.25

Caribbean, cargoes
- Avgas, Grade 100/130 ..... .16
- Gasoline, 93 oct research prem. 10.5
- Gasoline, 87 oct research reg. 9.625
- Gasoline, 79 oct research 8.875
- Gasoline, 70-72 oct motor method 8.75
- Kerosine 8.875
- Heating oil, No. 2 ..... 8.125
- Gas oil, 48-52 d. i. 8.375
- Fuel oil, bunker "C" $2.25

New York Harbor, barges
- Kerosine 9.35
- Heating oil, No. 2 ..... 8.85
- Fuel oil, No. 6 ..... $2.57-2.65

Okla-Group 3, northern shpt, bulk
- Gasoline, 89 oct reg. 11.5-12
- Kerosine 9.5-10
- Heating oil, No. 2 ..... 8.25-8.875
- Fuel oil, No. 6 ..... $1.20-2.00

Chicago, bulk
- Gasoline, 91 oct reg. 12-12.8
- Heating oil, No. 2 ..... 9-10.3
- Fuel oil, No. 6 high sulfur 6.65-6.75

Los Angeles, rack
- Gasoline, 88 oct reg. 11.5-13.6
- Diesel fuel, PS 200 ..... 10-11.25
- Light fuel, PS 300 ..... $3.05
- Heavy fuel, PS 400 ..... $2.50-2.70

Natural Gasoline, Grade 26-70
- FOB Group 3 ..... 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 4-5

Pennsylvania Lubes
- **Bright stock, 25 p.t. ..... 22↓**
- **200 vis. neutral, 25 p.t. ..... 21↓**

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent 95 v. i. 23-24
- Neutral, solvent, 200-210 vis. 19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v. i. ..... .24
- Neutral, solvent, 200 vis. 20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- **Avgas, grade 100/130 ..... 17.25↑**
- Gasoline, 79 oct research 9.875
- Kerosine 10.125
- Gas oil, 48 d. i. minimum ..... .10

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 ..... 2.83-3.07
- North Dakota, 36.0-36.9 ..... 3.07
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 ..... 3.07-3.22
  - West Texas, sweet, 36.0-36-9 ..... 3.00-3.07
  - West Texas, N. M., inter., 36.0-36.9 ..... 3.00
  - West Texas, N. M., sour, 32.0-32.9 ..... 2.86
  - East Texas, flat 3.25
  - Mirando, 28.0-28.9 ..... 3.31
- Illinois Basin, flat 3.00
- **Pennsylvania Grade, Bradford dist., flat ..... 3.90↓**
- California, Signal Hill, 21.0-21.9 ..... 2.63-2.85†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.92-3.02
- Wyoming sweet, 36.0-36.9 ..... 3.00
- Wyoming sour, 32.0-32.9 ..... 2.71

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.) 2.61
- Leduc-Woodbend (Alta.) 2.67
- Redwater (Alta.) 2.56
- Daly (Man.) 2.39
- Smiley (Sask.) 2.33

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido 3.75
- San Joaquin, 41.0-41.9, Puerto la Cruz 3.34
- Oficina, 35.0-35.9, Puerto la Cruz 3.05
- Tia Juana, Medium, 26.0-26.9, Amuay 2.55
- Bachaquero, flat, Las Piedras 2.03-2.08
- Tarra, 38.0-38.9, San Lorenzo 3.08
- Lagunillas Heavy, flat, Cardon 2.25

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura 2.08
- Safaniya, 27.0-27.9, Ras Tanura 1.79
- Iran, 34.0-34.9, Bandar Mashur 2.04
- Iran, 34.0-34.9, Abadan 1.99
- Iraq, 35.0-35.9, Fao 1.98
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.85
- Qatar 41.0-41.9, Umm Said 2.23

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon 2.49
- Iraq, 36.0-36.9, Tripoli, Banias 2.49

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, 37-38 ..... 2.75

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-New York, clean ..... (USMC —30%) $2.00↓**
- U.S. Gulf-New York, dirty ..... (USMC —37½%) $1.78
- NWI-USNH, dirty ..... (USMC —57½%) $1.15
- NWI-UK/Cont., dirty ..... (Scale —57½%) 13/10
- Persian Gulf-UK/Cont., dirty ..... (Scale —50%) 30/2*
- Persian Gulf-USNH, dirty ..... (USMC —60%) $5.08

**Sterling.*

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Jackson 2-6951

Boston 6 — Edward A. Callahan, Jr.
350 Park Square Bldg.
Hubbard 2-7160

Chicago 11 — W. F. Holbrook
520 North Michigan Avenue
Mohawk 4-5800

Cleveland 15 — J. E. MacArthur
1164 Illuminating Bldg.
55 Public Square
Superior 1-7000

Denver 2 — J. W. Patten
Mile High Center, 1740 Broadway
Alpine 5-2981

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Huntley 2-5450

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Donald R. Thompson
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Philadelphia 3 — W. A. Potter
6 Penn Center Plaza
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DEPT/Personals

ED PARKES has been promoted to president of United Gas Corp., Shreveport, La. He succeeds N. C. McGowen, who will continue as chairman of the board. Parkes has been executive vice-president of United; and has also been serving as president of United's two subsidiaries, United Gas Pipe Line Co. and Union Producing Co.

EUGENE HOLMAN, chairman and chief executive officer of Standard Oil Co. (N.J.), has been elected a director of the Chase Manhattan Bank, New York.

E. Holman

T. L. Wark

THOMAS L. WARK, vice-president of Tidewater Oil Co., has been appointed special assistant to George F. Getty II, president, in San Francisco. Wark was formerly western division general manager, also in San Francisco.

R. E. LUTON, refining vice-president of Ohio Oil Co., Findlay, Ohio, has been elected a director. He replaces **H. C. King,** who will retire. Luton was made manager of the refining division in 1947, and vice-president of refining in 1953.

FRANK MAIR has been named controller of Hudson's Bay Oil & Gas Co., Calgary. Mair, formerly chief accountant, succeeds **F. F. Sellers,** who has resigned.

WARREN J. COLLINS has been appointed general counsel for Lone Star Gas Co., and its subsidiary, Lone Star Producing Co., in Dallas. He succeeds **Marshall Newcomb,** who has resigned as director, vice-president, and general counsel due to ill health. Collins has been assistant general counsel since 1950.

C. M. HARTWELL is superintendent of the newly established production division office of Cities Service Oil Co. at Wichita Falls, Tex. Hartwell was formerly Lafayette (La.) district superintendent. The new division will include the Wichita Falls district office, supervised by **A. C. Comstock,** and the Pampa office, supervised by **M. A. Bolick.**

ERWIN WITTE has become assistant comptroller of Standard Oil Co. of California, in San Francisco. Witte was formerly assistant comptroller of Standard Oil Co. of California, Western Operations, Inc., also in San Francisco. **Edward E. Adams** has been appointed personnel and labor relations manager for the producing department of the operating company. Adams, formerly superintendent for the parent company's Kerto-Cymric district near Taft, Calif., succeeds **Edwin J. Ball,** who is retiring.

JAMES W. VICKERS has been elected a director of Vickers Petroleum Co., Wichita, Kan. He is president of Kent Oil Co., Salina, Kan., Vickers marketing subsidiary, and vice-president of marketing, and crude purchasing for the parent company.

ALLAN B. ERWIN has joined the engineering staff of Apache Oil Co., Tulsa. He was formerly with Gulf Oil Corp., in Evansville, Ind.

ALBERT W. SUBLETT has been appointed assistant supervisor of light oils planning in the manufacturing department's planning division of Standard Oil Co. (Ind.). Most recently, he was assistant general foreman in the light oils division's finishing department, at the Whiting (Ind.) refinery.

FRANK T. GRASSY becomes industrial relations manager of Great Northern Oil Co., St. Paul, Minn. He was formerly industrial relations director for Miller Brewing Co., Milwaukee, Wis.

HERMAN J. STERN, a partner of Stern, Frank, Meyer & Fox, has been elected a director of Southern California Petroleum Corp., Los Angeles.

W. R. MENDENHALL has been appointed to the new position of assistant manager of the crude oil, natural ural gas, LP-gas, and natural gasoline sales division of The California Co., New Orleans, subsidiary of Standard Oil Co. of California. He was formerly special representative for California Crude Sales Co., Perth Amboy, N.J., also a California Standard subsidiary.

W. R. Mendenhall

W. H. Hesketh

WILLIAM H. HESKETH is the first president of Standard-Vacuum Refining Corp. (Philippines), affiliate of Standard-Vacuum Oil Co. He is chief executive officer for the $33.5-million refinery to be built on the Bataan peninsula. Hesketh was formerly acting manager of Stanvac's refinery in Bombay.

J. VAN LINDLEY, director of development and exploration for Titan-Tex Drilling & Production Corp., Shreveport, La., was promoted to executive vice-president. **Paul L.**

Cooper has been named director of petroleum property acquisitions, and **Lee C. Bailey, Jr.**, superintendent of production. Cooper has been an independent oil operator since 1924. Bailey has served as a district engineer with B. J. Service, Inc., for the past five years.

R. V. MILLER, head of the general tax department of Shell Oil Co., New York, was reelected general chairman of the Mid-Continent Oil & Gas Assn.'s federal tax forum. **Charles R. Bell**, who holds a similar position with Continental Oil Co., Houston, was reelected vice-chairman.

JESS B. DUVAL is the new marketing vice-president of Shelton-Warren Oil Co., Roswell, N.M. Most recently, he was sales manager for Humble Oil & Refining Co., in Gaines, Andrews, and parts of Yoakum County, Tex., and in Lea County, N. M.

SIR HARTLEY SHAWCROSS, legal adviser to the Royal Dutch Shell group, has been elected to the board of Shell Petroleum Co., London.

JOHN C. ANDERSON has been named controller of Vickers Petroleum Co., Wichita, Kan. Under the direction of **Thomas F. Dowd, Jr.**, vice-president of finance, Anderson will take charge of the newly formed controller division and supervise the accounting, traffic, and purchasing departments. Anderson was formerly controller of Pontiac Refining Corp., Corpus Christi.

R. D. ROPNER, president of the chamber of shipping, in London, England, has been named a director of BP Tanker Co., Ltd. and BP Clyde Tanker Co.

J. P. MALOTT will be promoted to assistant regional general manager of Continental Oil Co.'s Rocky Mountain region operation, on July 7. Malott, now manager of Continental's production department, in Houston, will have offices in Denver. **Wayne E. Glenn**, presently assistant regional manager of production in the Rocky Mountain region, will succeed Malott in Houston. **W. F. Brown** has been promoted to manager of manufacturing for the Rocky Mountain region. Brown, formerly assistant regional manufacturing manager, will continue to make his headquarters in Denver. He replaces **J. E. Fenex**, who has retired.

FRANK LINDEMAN, JR., will establish Tulsa offices as a consultant to the petroleum industry in production matters. He recently resigned as vice-president of production for Pan American Petroleum Corp., Tulsa.

J. Harrop

H. H. Meier

JAMES HARROP and **H. H. MEIER** have been named assistant managers of Humble Oil & Refining Co.'s Baytown (Tex.) refinery. Harrop's responsibilities include five divisions; coordination and blending, technical, employee relations, medical, and accounting and plant protection. Meier will supervise the operating, utilities and oil movements, and mechanical and construction divisions. **H. F. Goss** has been named operations advisor to Harrop, and will work on special assignments. **W. B. Franklin** heads the new technical division formed by consolidating technical service, engineering, and the service and inspection laboratories. **H. F. Hartman** is the new mechanical and construction superintendent. **Ralph G. Sharpless** has been promoted to senior engineer in the technical division of the refinery. He will handle major refinery projects as well as maintenance and construction work for the refinery's two Hydroformers.

HENRY E. WINTER is executive representative in Caracas for International Petroleum Co., Ltd., subsidiary of Standard Oil Co. (N.J.). He succeeds **Edmund C. Breene, Jr.**, who is retiring. Winter was formerly Venezuelan coordinator, at International's executive offices at Coral Gables, Fla.

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Do Conservation Laws Need Restudy?

THE ECONOMIC POSITION OF DOMESTIC PRODUCERS has been an extremely popular subject for several years. Particularly during the past two years, a lot has been said about improving the producers' economics through technological changes.

The areas of such changes that are "needed" to improve the economic lot of domestic producers run the gamut from entirely new technological concepts in drilling to fully automated lease operations and major changes in secondary recovery techniques.

Stated simply, the major economic problem of producers is how to develop and produce oil and gas reserves as economically as possible. Certainly, there is room for improved drilling and producing techniques. There have been changes in recent years—and undoubtedly there will be more—to aid the economic position of producers.

TECHNOLOGICAL CHANGES ARE NOT THE ONLY SOLUTION to the economic ills of producers. There is at least one other area where improvements could be made to benefit domestic producers. And that is in the field of conservation laws, according to E. B. Miller, Jr., vice-president and general manager of the southern division of Tidewater Oil Co.

He told a recent meeting of the Dallas-Ft. Worth Chapter of the American Assn. of Oilwell Drilling Contractors that, in day-to-day operations, domestic producers are hamstrung by antiquated practices and concepts of proration and of well-spacing.

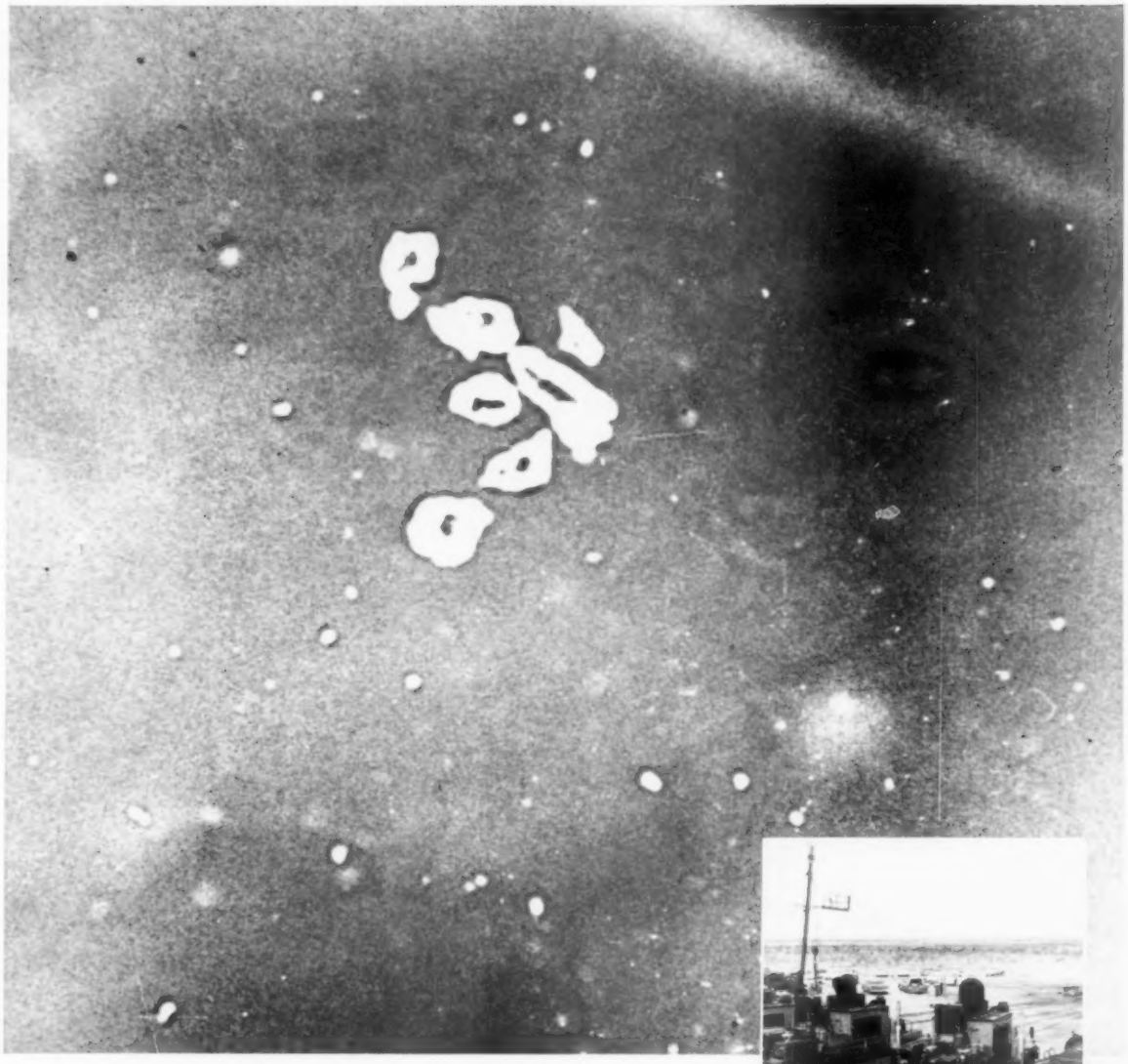
Proration formulas and well-spacing regulations, Miller argued, are not altogether realistic when it's considered that U.S. production is in competition with production from other parts of the world.

A change is needed, he said, in the concept that 20 acres or 40 acres for an oil well, and 80 acres to 160 acres for gas wells, constitute wide spacing. Also, Miller contended, proration formulas now in effect give "disproportionate" weight to the "well factor," and not enough recognition to proved reserves.

CONSERVATION LAWS TO REDUCE UNNECESSARY WELLS would be one of the most forward steps that any regulatory body could undertake, said Miller. The present method of increasing production is to drill more wells—a complete disregard of the ability of individual wells to produce, or the reserves to sustain production, he said.

Wider spacing patterns, he argued, would not necessarily mean that fewer wells will be drilled. If a more realistic return on investments could be achieved through higher per-well production rates, then the profits would "unquestionably flow into additional exploratory effort, resulting in new discoveries which would require development."

Not all producers will agree that conservation laws are completely unrealistic. But there is some food for thought in Miller's arguments for a restudy of some regulations, in view of the competition of oil from overseas.



Here's Why Duofrac Is Used To Fracture Wells In The San Andres

The white crystals you see in this thin-section photomicrograph are salt. These salt crystals remain virtually undisturbed when a formation is fractured with oil-base fracturing fluids.

Not so when Duofrac* is used. Duofrac uses fresh water with a low concentration of acid as the fracturing fluid. The fresh water acts to dissolve the salt while the acid attacks the acid-soluble materials. This dual action is designed to increase the well's drainage area and, consequently, the oil production.

In many formations—for example the San Andres, Yates and Tubbs—Duofrac is proving to be more effective than other fracturing treatments.

The combined salt and limestone dissolving characteristics are only two of many benefits Duofrac offers; others are the low cost, the minimum fire hazard, and the high density and low viscosity of the frac fluid. As the developer of Duofrac, Dowell has a history of successful treatments. This store of knowledge is yours for the asking.

For more information on Duofrac or any other of the Dowell methods of well stimulation, call the Dowell station nearest you.

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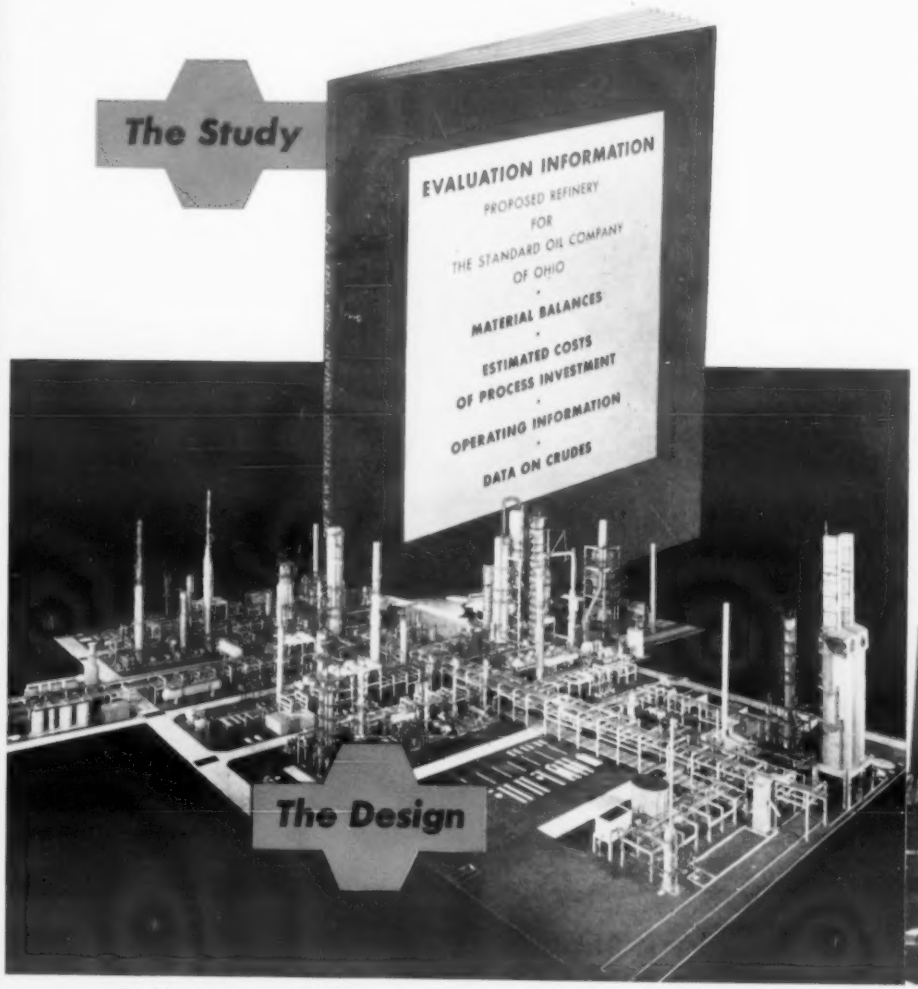

To achieve the ultimate in design, yet assure the most economic plant, Kellogg built this 26' x 29' scale model concurrently with designs to assist all levels of management, as well as all categories of engineering and refinery personnel, in design reviews well in advance of major construction.

When refining capacity must be increased, an oil company's planning group has to evaluate the technical and economic pros and cons of modernizing by degree or scrapping outmoded facilities and rebuilding completely. When the decision is to start from scratch, hundreds of variables are involved in choosing location, type and range of crudes, product mix, process line up, degree of integration, and refinery size. Which combination will insure the optimum in efficiency, economy, yields, flexibility for the future, and return on investment?

Faced with exactly this time-consuming multiplicity of problems, The Standard Oil Company of Ohio first scheduled decision deadlines for each planning phase, then called upon Kellogg for refinery material balances, estimated process investment costs, operating information, and data on various crudes. Decisions from this study, each made on schedule, served as the blueprint for Kellogg's second assignment—engineering and constructing an integrated new plant at Toledo, Ohio. Designed for a capacity of 60,000 BPSD, this $40 million refinery is an outstanding example of sound economics at work in plant planning and execution.

With most oil companies concerned with tomorrow, there is no better time to be discussing future plans and problems with Kellogg than today. Kellogg's Contract Sales Division welcomes the opportunity to put its coordinated engineering, procurement, and construction services at your disposal.

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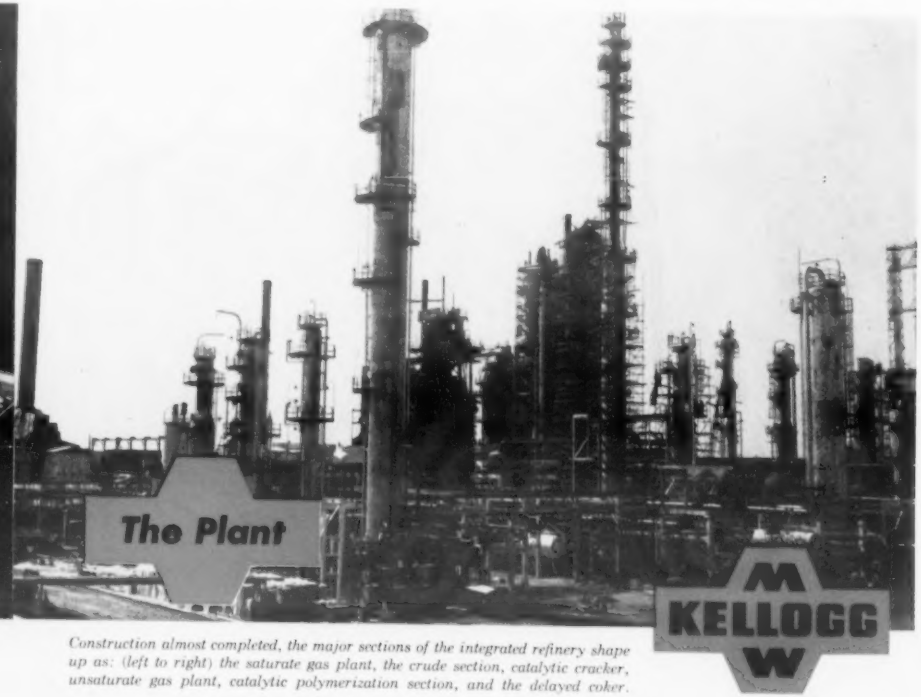

Construction almost completed, the major sections of the integrated refinery shape up as: (left to right) the saturate gas plant, the crude section, catalytic cracker, unsaturate gas plant, catalytic polymerization section, and the delayed coker.